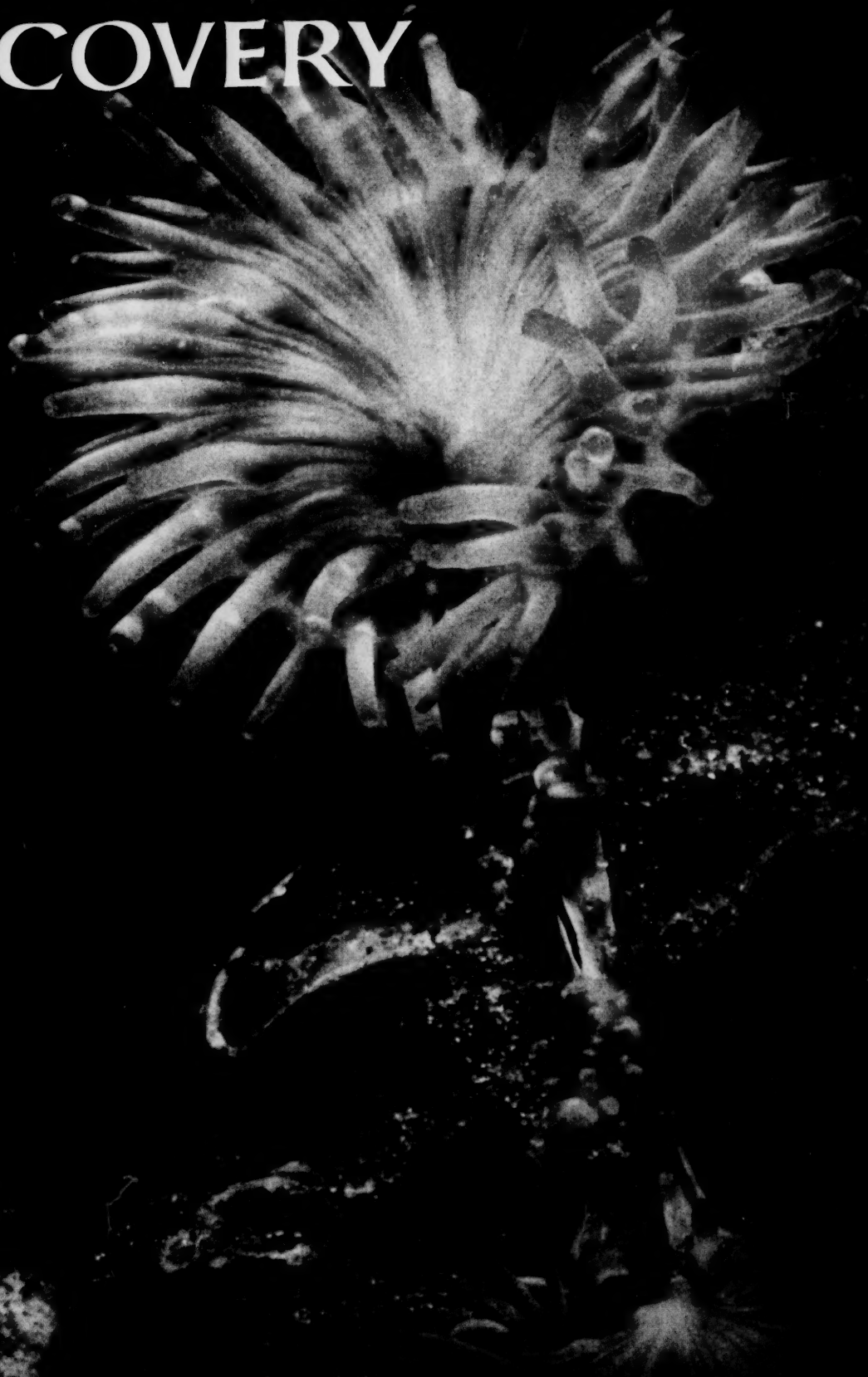


# PACIFIC DISCOVERY



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THE REPORTING and interpreting of science news to the man in the street has become an increasingly vital part of everyday journalism. This fact is emphasized by the world tour, now in progress, of eight Japanese newspaper men. With a month in the United States, and several weeks to be spent in England, Western Germany, Italy and other parts of Europe, and stops in India on the way home, the tour is sponsored jointly by The Asia Foundation, San Francisco, and the Japan Newspaper Publishers and Editors Association, Tokyo. Held twice before, this annual event enables picked Japanese science writers to visit university, government, and private science research centers and to talk shop with scientists and journalists. They will go home with greatly broadened perspective on world science, better equipped in many ways to do a more effective job. On May 4 your editor was privileged to meet these gentlemen at a reception in the San Francisco home of The Asia Foundation's Director of Programs, Mr. John F. Sullivan. They are: Hiroshi Ishikawa, Deputy Chief of Science News Section, Kyodo News Service, Tokyo; Takeshi Iwasaki, Deputy Chief of Science and Techniques Section, Nihonkogyo Shimbun, Tokyo; Yosuke Abe, Science Writer, Hokkaido Shimbun, Tokyo; Takao Fukuda, Science Writer, The Sankei Shimbun, Tokyo; Shosaku Furuta, Science Writer, Mainichi Shimbun, Osaka; Kunitsugu Takahashi, Science Writer, Kyoto Shimbun, Kyoto; Shinji Masaki, Art & Science Section, Chugoku Shimbun Sha, Hiroshima; and Shiro Kikuchi, Science Writer, Kahoku Shimpō Press, Sendai. Their escort-interpreter in the U.S. is Manabu ("Bill") Fukuda, Washington, D.C. Bill Fukuda hails from Selma, California and is a graduate of Fresno State College. For an American, he speaks pretty good Japanese. (Shimbun, or shin-bun—we learned—means newspaper. Some of the big Japanese dailies have five to ten science writers on their staffs, which must say a lot for the science-mindedness of Japan's citizens.)

Either we are not sufficiently science-minded, or we haven't gotten the word—about Panorama, a publishing enterprise of the Columbia Record Club, Inc., New York. The product is a projector with three subscription series of picture books, each with a front pocket containing two cards of 16 color slides each, and a back pocket with an LP disc of the book's text rendered by a well known voice. The three "Colorslide Program" series are *Art*, *Travel*, and *Nature and Science*. Meeting Tay Sloan, author-photographer of the *Wonders of the Pacific Seashore* number just out, at the home of our associate editor Joel Hedgpeth a few days ago, we learned that the *N. and S.* series may be discontinued because only about 10 per cent of Colorslide subscribers are taking it. Nature-wise, arise!

THE FIRST TWO PARTS of the Campbell Island story by Dr. Alfred M. Bailey, Director of the Denver Museum of Natural History, appeared in the two issues preceding this one. It was a distinct pleasure to meet Dr. Bailey's daughter, our author Patricia Bailey Witherspoon ("Canton Island," "Koalas, Kookaburras, and Kangaroos") last month when she presented the Australia story in full moving color as an Audubon Screen Tour lecture at the Academy. . . . ¶ Naturalist-writer Harold L. Monroe lives in Lomita, California. . . . ¶ Curator of birds and mammals at the San Diego Natural History Museum, Laurence M. Huey has worked long, far, and wide in our Southwest deserts and Baja California. . . . ¶ Philip Hyde, who lives near Greenville in the northern Sierra region of California, has won a secure place among photographic interpreters of our wild landscapes. . . . ¶ Phyllis W. and Weldon F. Heald make their home in Tucson, Arizona. . . . ¶ U.S. Fish and Wildlife Service Biologist Karl W. Kenyon hangs his hat in Seattle occasionally when not off studying furbearers of our Alaskan waters and shores. . . . ¶ C.A.S. Assistant Curator of Astronomy O. Richard Norton and his wife recently moved to Novato, north of the Golden Gate; and the Arthur C. Smith family is breaking in a new home in Hayward.

D.G.K.

#### PRE-DISCOVERY

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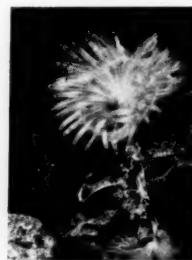
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#### THE COVER

AGGREGATED ANEMONE  
(*Anthopleura elegantissima*)  
of our Pacific Coast.  
Taken near Point Reyes  
by Woody Williams.

*Pacific Discovery* is published bimonthly at Gillick Printing, Inc. by the California Academy of Sciences. Publication office: 2057 Center St., Berkeley 4. Editorial, Advertising and Circulation offices (to which all correspondence should be addressed): Golden Gate Park, San Francisco 18. Annual subscriptions: U.S., \$3; Foreign, \$3.50. Single copies, 50c. Members of the Academy subscribe through their dues. Entered as second-class matter, February 17, 1948, at the Post Office, Berkeley 4, Calif., under the act of August 24, 1912.

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A JOURNAL OF NATURE AND MAN IN THE PACIFIC WORLD

# On Rediscovering the Earth

VACATION TIME will soon be here again with its annual reactivation of our innate wanderlust. The old feeling has been upon us since too early in spring for the good of whatever economic causes we are supposed to be devoted to. And by this riotous time in May we know we can hold back the Gypsy in us a little longer only because June is just around the corner, and besides we—teachers and parents alike, not to mention our young—are rather effectively belayed by such devices as the school semester.

So back to the road maps, guide books, brochures, and all the rest of the literature of Pan-pipe music; and why not reflect, while we have a little time, not only on the charm and nature of far away places, but even on the cause and effect of this peregrinative faculty we seem to be born with. We might, just possibly, get some added kick out of that vacation trip if we keep in mind, on the road, our kinship with all previous wanderers and explorers of human time on earth.

The British author, geologist, and noted explorer Frank Debenham, who was a member of Scott's South Pole expedition of 1910-13, has in a richly graphic manner highlighted the history of human restlessness in his book *Discovery and Exploration: an Atlas-History of Man's Wanderings*.<sup>\*</sup> It began, Debenham tells us, when the common ancestor of man and the primates came down from the trees and "at some moment in the remote past . . . left the forest and ventured onto the open plains." There he began to use

his forelimbs for something besides locomotion, and gradually developed "the most remarkable of all tools—the human hand." He was then equipped to hunt the animals of the open lands, to follow, even to migrate with them in their ceaseless search for food. He invented cutting tools, discovered fire, and when the Ice Age came "he endured devastating changes of climate and wandered over wide areas of the globe."

He has been at it ever since—for ever pulling stakes and moving on, his inventiveness aiding his mobility over both land and water, until he covered the earth. "Excluding Antarctica," Debenham reminds us, "modern man has not yet discovered any large tract of land without finding that primitive man had already been there." His title, he says, should be *Rediscovery and Re-exploration*, since it deals mainly with historic—not prehistoric—travelers and explorers. Even primitive man, we may be sure, was sometimes curious to know what lay across the river and beyond the mountain; but the true history of exploration begins with that of civilization itself as it arose in the Near and Middle East. From Queen Hatshepsut's trading expedition to the land of Punt, right down to the travels of our space pioneers, there has been a veritable parade of "name band" explorers and some lone travelers. Much of the early record is lost, certainly; but the amount that survives is proof that ever since man first learned to document his doings in some way, geographical discovery has been one of his most important activities. So through the pages of this brief outline of a vast record

(Continued on page 30)

\* Review data of books mentioned are given on page 30.

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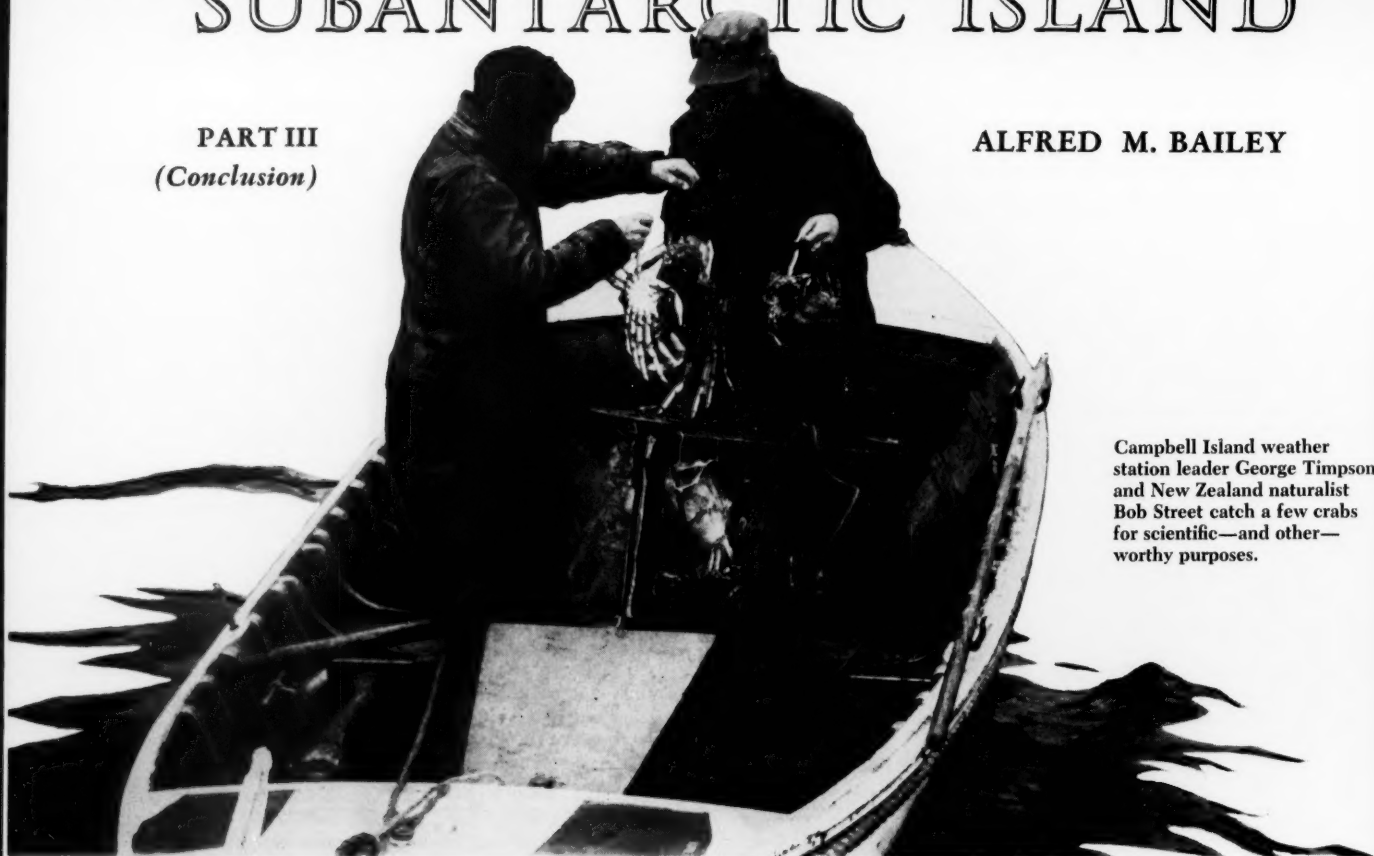
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Berkeley 4

# SUBANTARCTIC ISLAND

## PART III (Conclusion)

ALFRED M. BAILEY



Campbell Island weather station leader George Timpson and New Zealand naturalist Bob Street catch a few crabs for scientific—and other—worthy purposes.

CAMPBELL ISLAND'S new meteorological station was ideally situated, for often there was a splendid view down Perseverance Harbor. Almost always sunrise was a blurring of clouds with a shaft of light illuminating some bit of turbulent waterway. Thousands of sooty shearwaters worked from one section to another, and they would rise with a flurry of wings and spray, and fly a short distance, only to dive on some small prey upon which they were feeding. When many of the great royal albatrosses curved low, or rested upon the island waters, we knew there were terrific winds over the mountain summits. Sudden gusts would whip the harbor into a veil of white mist which traveled over the dark waters with express-train speed.

Bob Street set traps for large subantarctic crabs, and the cook often confiscated the catch for a more useful purpose than mere scientific study. Bob combed the shores of Perseverance Harbor to count elephant seals, and then with pack on his back for overnight stays, visited all of the remote coves. Jack accompanied him occasionally, and on a journey to Monument Harbor

—a harbor by courtesy only for terrific waves beat against the coast—they ran across the only leopard seal encountered, a long, snaky looking species with especially prominent teeth sure to make an impression upon anyone venturing too near.

Our laboratory was set up at the old camp in Tucker Cove where Wichers and Putnam had luxurious quarters, for the subantarctic, in which to prepare their specimens. Few visitors to museums have any realization of the work entailed in securing and preserving museum collections for shipment over great distances, to say nothing of the difficult task of mounting and placing them on exhibit.

When planning our expedition, we found it hard to decide upon the right month, for we wanted to be on Campbell Island when albatrosses were nesting and at the same time the large bull elephant seals would be hauled out on shore. The breeding season of these great mammals is in September and October, but at that time the albatrosses would not be present. There are always a few seals on the island, but the big bulls



go out to sea in November to feed and grow fat after their long sojourn ashore. They usually return to Campbell Island about the first of February, however, remaining in odoriferous wallows to shed their hair. Consequently, January and February seemed an ideal time for the expedition, when we could expect both nesting albatrosses and elephant seals to be present.

Every cove in Perseverance Harbor and all protected nooks around the coast had each its quota of seals. A group of young of the year—immature bulls and females—were within 100 yards of our headquarters, thus were under continuous observation, and all the coves adjacent to camp were visited every few days so there were many opportunities to study the seals at close range. Females and pups were numerous in early January, and then they seemed to dwindle in numbers. On a trip around favorite hauling-out spots late that month not one was seen.

The preparators grew concerned that possibly they had waited too long to take a specimen, but on the next trip a female with a beautiful new coat was located several hundred yards back from shore. Because of the weight of the animal, it was advisable to make the seal lumber to the shoreline where it could be handled easily, but this one had other ideas. It took four hours of work on the part of all the volunteers of the station staff to back the proposed museum exhibit to where the tide would pick it up.

The specimen was secured and the hide towed to the boathouse for careful preparation, the skin being shaved to a thinness that would assure preservation. Finally, long after dark, the work was completed and

the hide was stretched on the floor of the boathouse.

When Wichers and Putnam returned to work next day, they were surprised to find another female elephant seal—sound asleep in the middle of the salted skin! With brooms the boys literally swept the protesting animal out of the laboratory. She faced her persecutors, grumbling and protesting, slowly backing up some 20 feet away, then lowering her head dropped off in slumber.

We were returning from a visit to the crab traps down Perseverance Harbor on February 3 when we sighted our first mature bull seal. He was close to the boathouse, cruising along on top of the water, sometimes submerging his head and exhaling under the surface, making a noise like the blowing of a whale. Later, from shore, his progress was watched as he traveled slowly up the coast a half mile to the base of Beeman Hill.

We hurried around as fast as possible through fern and shrub, but the bull was climbing the bank through tussock before a vantage point for filming could be reached. He was a huge brute so heavy that he had difficulty pulling himself up the slope; he would rear up on his front flippers, lunge forward a short distance three times in succession, and then drop his head down, inflating his great nose. Both nostrils were opened as he breathed heavily and only one when he exhaled. Eventually he reached a wallow, no doubt used by generations of his kind, and it seemed to us he gave a sigh of relief as he settled down in its muddy coolness.

Kaj Westerskov had a project of counting and band-





The various steps in banding an albatross, with the author beginning the approach.

ing albatrosses which took him to the main concentrations of the royals above the 400-foot level, and we often accompanied him. Banding took two people and the technique was quite simple. One would merely walk up to an incubating bird, gently stroke it, and remove the egg so it would not be broken. The bird's attention was then diverted with one hand and the razor-sharp beak was grasped with the other. Gashed hands at the end of the day often testified that the albatross closed down first! While the bird was held helpless a large metal, numbered band was fastened to a leg. It is by means of banding that the life histories of individuals of many species of birds have been made known.

Many of the royal albatrosses were measured, and it was found the average span from tip to tip of wing was around 10 feet 5 inches, with the maximum stretch for the species probably being 11 feet.

The north shore of Perseverance Harbor was precipitous, its lower slopes clad with tussock, fern, and heavy shrubs. Several visits were made to the upper tussock slopes where three wandering albatrosses were upon their eggs. Unlike the royals, the females of the wandering albatrosses differed in color from the males; they had black caps and white cheek patches, while the breasts were grayish with small lines. They sat stoically upon their nests, as is usual with albatrosses of all species. Only females were seen. There may have been males upon nests nearby, but they are white like the royals and could have been easily overlooked among groups of the latter.

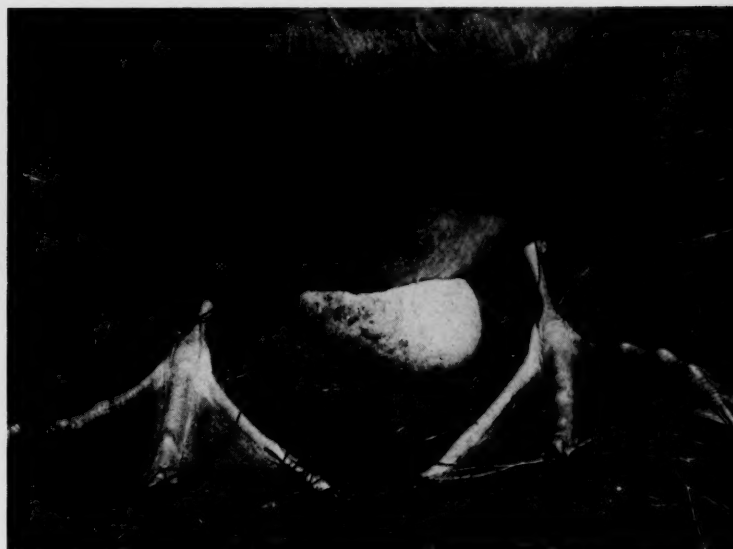
The wandering albatrosses have a circumpolar nesting range of islands of the subantarctic, while the royals are much rarer, with their breeding habitat restricted to the islands of New Zealand. All species of albatrosses fly great distances when not nesting, many of the Southern Hemisphere species circling the globe north of the antarctic ice fields as they search for food. Banded birds have been recovered thousands of miles from the place of tagging, and experiments of carrying marked Laysan albatrosses by airplane 3,000 miles from their nesting places have resulted in the birds' returning home within a few days.

The end of the peninsula beyond the crest of Moubray Hill dropped rather gently to the northeast end of Perseverance Harbor at Erebus Point. The Point was flat and wave-worn with gigantic boulders close to the water's edge. In the shallow pools were masses of black kelp, strands swirling with the washing of the





← Wandering albatross on the nest.



waves. Anyone with imagination could visualize such spots as bathing places of mermaids, the trailing kelp being long dark tresses of submerged swimmers.

The rocks were the hauling-out places for many sea lions and fur seals, the latter wary and moving off whenever disturbed. They were once exceedingly abundant on the majority of subantarctic islands of New Zealand, but their numbers were sadly depleted by hide hunters within five years' time. Thousands were killed and it is only recently, thanks to government protection, that the fur seals have become numerous.

The lumbering sea lions were without value except for oil, and so were not persecuted to the same extent as the fur seals. The temperament of the two species differs greatly. The fur seals hastened out of our way while the bull sea lions invariably lumbered forward menacingly, walking on all four flippers, and baring efficient, sharp teeth. We never argued with them.

To the north of Erebus was Smoothwater Bay where, in a pocket, there was a small nesting colony of the unique Campbell Island cormorants. Among the rocks above the high water mark were concentrations of erect-crested and the comical rockhopper penguins, associating with sea elephants, sea lions, and fur seals. The penguin young were well past the downy stage—large fat birds keeping close to the heavy fern and tussock and the base of the cliffs, where they clustered together in little bands. Adults formed groups upon rock slides. When disturbed they started upward, hop-



→ Some of the stages in hatching an albatross (royal).





↑ Denver Museum artist Bill Traher and preparator Henry Wichers complete a plaster mould of a female seal.

← Who can blame an elephant seal for bellowing a protest at the prospect of becoming a museum specimen?

➤ Female elephant seals are very much smaller than their lordly masters.

ping from one boulder to another as they scrambled to get out of our way.

Field work on Campbell Island was a continuous operation, regardless of weather. There was so much to do and so little time in which to accomplish the tasks. Artist Bill Traher was constantly in the field and finally decided upon the magnificent beach and precipitous shoreline of Southwest Bay to be reproduced as a panoramic painting 100 feet long.

After the arrival of the first bull seal there was a steady build-up in the population of old males. On February 8 more than 100 were counted close to headquarters and nearby coves. They rested one upon another in the wallow, grumbling and snorting as some restless individual interrupted the tranquility of the community mud bath. Whenever we disturbed them, one or two would rear up on their foreflippers with red mouths wide open and roar their indignation. If we remained motionless, they would slowly sink back into the wallows and fall sound asleep. They were difficult to photograph for they merged with

their surroundings, and often were crowded together so that it was impossible to separate one from another.

Many of the bulls were frightfully mutilated, with great chunks torn from their hides, whether from onslaughts of fierce leopard seals, killer whales, or sharks we could not tell. Many were most disreputable looking as they shed large patches of hair.

Wichers and Putnam, with Jack assisting, spent hours visiting several colonies and measuring the various bulls. The largest one, from tip of nose to end of rear flipper, was just under 18 feet—truly massive animals, especially when it is remembered that elephant seals feed upon squid and other invertebrates. The teeth of the big bulls reflect this diet—large canines for defense, and little peg-like ones behind, which are of little use except as strainers.

On February 10 we chose specimens to be included in our Museum display. It was a typically foggy morning, and all the station men who were not on duty accompanied us to Venus Cove where two huge bulls were thoroughly photographed, driven to the beach





It was no great problem to scale off a bull elephant seal that was sound asleep—a bit ticklish when he was awake.

where they could be more easily handled, and collected. They were so heavy that it was necessary to await the incoming tide to give them a lift so they could be turned over for skinning.

Flocks of skuas immediately assembled on the carcasses; giant petrels circled out in the bay awaiting our departure, and dainty little cape pigeons swam near dipping up fat from the water. A photographic blind was erected and Jack and I perched behind still and motion cameras.

As soon as the men left with the launch, hundreds of the awkward, strong-beaked giant petrels waddled to shore in front of our hide where, with widespread

wings, they would grasp the tough fat with powerful mandibles and tug backward. They stuffed themselves with so much food they were unable to fly.

Back at the boathouse the elephant seal skins were carefully shaved and spread with salt. The main tasks of preparation were completed. Boxes were made from lumber which had been sent down on the November relief ship, and all specimens and equipment were packed so they would be ready when the *Brough* returned. Over the wireless had come word of the breaking up of the ice runways in McMurdo Sound. The Globemasters flying from Christchurch could no longer land. We were not surprised when a message was



Jack Murphy and George Timpson with  
a giant petrel too gorged to fly.



received from Captain Boney that the U.S. naval vessel would be in February 20.

In the few days left we tried to be afield as often as possible. January and February had been chosen for work on Campbell Island in order to get photographs of the royal albatrosses and their young. So, regardless of weather, Jack had been making trips to St. Col, checking on the numerous incubating birds.

One morning the sun climbed into a clear sky, a most unusual performance. Jack, Bill Traher and I, with packs on our backs, set out along the beach to Tucker Cove, past the groups of elephant seals which showed resentment at being disturbed, and up the metal-mat tractor trail to the old camp. A narrow spongy path led straight up the mountain through the shrub forest, and we were half way up St. Col Peak when the fog closed in.

We remained on the summit all day sheltered behind rocks from the chill wind, hoping for a break in

weather. There were occasional bands of racing light across tussock slopes on other peaks around Perseverance Harbor, but none where we were. Jack always carried a schoolbook along so he might study if he got a chance. On this occasion, as he crouched in a cranny out of the wind, he commented "I wish my teacher could see me—imagine studying Shakespeare with one eye and watching albatrosses out of the other!"

The air was filled with flying royals and on several nearby ridges were excited groups going through their gam activities. When one performance started within fifty feet, I crawled down close to them. Although the mists swirled by, I took black-and-white stills of incoming birds as they banked with feet outstretched to make a landing.

Although light conditions were poor, our trip was a partial success. Jack visited all the nesting albatrosses in the near vicinity. After establishing friendly relations with each in turn, he would slowly slip his hand

under the bird and withdraw the egg. Three were pipped and he could hear the little chicken-like notes as the young struggled to free themselves.

Two days later we were back, several eggs had hatched, and downy young were being covered by solicitous old ones. The parents showed no resentment of our disturbing their privacy except for the usual clacking of beaks and an occasional snap at an outstretched hand. They readily sat up and posed with their brand new offspring.

In some ways that last morning with the royal albatrosses and their young, sharing my experiences with my 15-year-old grandson, was rather a climax in my work with birds in many far places throughout the world. My first expedition nearly 50 years ago had been to a remote Pacific island of the Hawaiian group where I had become acquainted with the Laysan and the black-footed albatrosses of the Northern Hemisphere. During the ensuing years, of the 13 species of these wonderful sea birds known to science, I personally interviewed and photographed seven on their breeding islands, but the royal albatrosses were the finest of them all. Surely few field men have been so privileged.

All our boxes and equipment were in the warehouse on the dock by February 18. The last several days were exceedingly stormy. Everyone hoped for clearing weather except Jack who prayed the winds would be so strong the *Brough* could not enter the harbor—he had fallen so much in love with the life on Campbell Island that he wanted to remain over until November and go out with the annual relief ship.

We all felt the longest part of the six or seven thousand-mile journey home would be from Campbell Island dock to the destroyer escort's deck with our

precious cargo of specimens. February 19 dawned clear, with scarcely a breeze. We did not know whether to be pleased or not, for rarely would good weather hold out for 24 hours.

In the afternoon, the most beautiful one of the whole trip, a last run was made to the favorite coves to pay a farewell visit to the sea lions and huge elephant seals. The launch was beached in Garden Cove where, according to a legend without foundation, a titled French lady had been marooned for political reasons. We examined the ruins of the old home where she was supposed to have lived. In reality, it had probably been built for a French expedition to observe the transit of Venus back in 1874, and was used as headquarters by sheepherders in following days.

There were many reminders of days gone by on Campbell Island—iron pots where sealers had tried out oil, strings of wire where sheepmen had laboriously fenced off paddocks. Although the latter had a few horses, they had to carry most of the supplies on their backs over the difficult terrain, a tremendous amount of labor with little compensation—without even the satisfaction in a task well done.

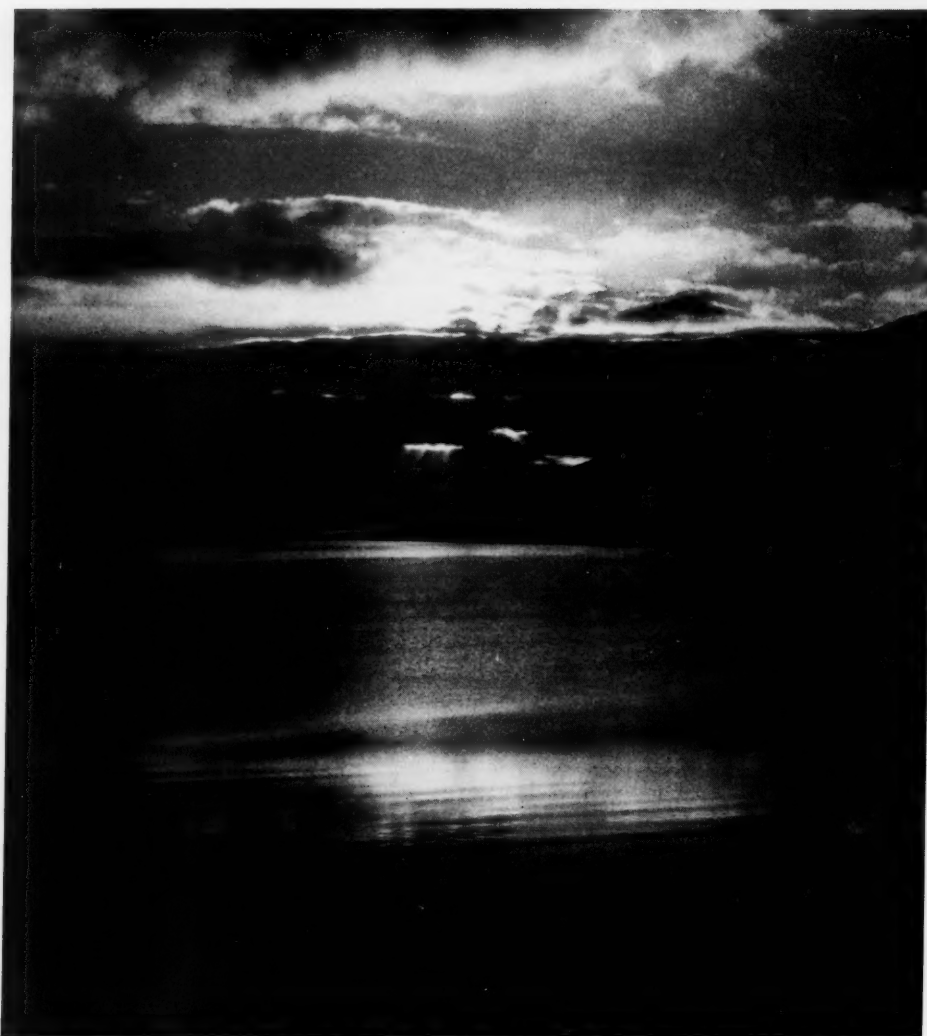
Near the ruins of the old shack were numerous seals hauled out on the beach. We backed one into the water to film him swimming away. Later as we drifted along, we literally brushed another with the bow of our craft; the startled animal, stranded in the shallows, reared up high and threatened to lunge aboard.

It was a quiet afternoon with seals more numerous than we had ever seen them, sometimes just individuals sprawled on grassy slopes staring reproachfully as their slumbers were interrupted, or again, eight or ten piled on one another in a mud hole.

Flocks of little Antarctic terns were wheeling and



The Antarctic skua was one of the familiar birds of the harbor.




A last sunrise look at Perseverance Harbor, Campbell Island.

plunging headfirst into the quiet waters. Skuas rested on sand banks; and giant petrels, shearwaters, and cape pigeons kept well on either side of the boat as we chugged along.

That night the cook had a farewell dinner—a meal any hotel chef would have been proud to serve. The menu featured island fowl, mussels, and crabs, with the necessary trimmings. It was a pleasant evening, tinged with regret that our trip to such a far part of the world had come to an end.

Exactly at seven the following morning the *Brough* came around into the mouth of the harbor and slowly proceeded to the anchorage. The winds were still and the ship launches came to the dock. Soon the sailors

had our heavy boxes stowed on deck without a splash of spray upon them. The anchor was pulled, the gray destroyer escort slowly turned, and we were on our way, looking back toward our island home and waving to the friends who followed in the little launch which had served us so well.

Our subantarctic venture was over. In the days to come it is our hope that, as a result of our experiences, hundreds of thousands of visitors to Denver each year from all parts of the world will become acquainted with Campbell Island where dwell the royal albatrosses—the most beautiful of all the great winged sea birds which make their homes on that little known New Zealand outpost so near the Antarctic. 



## Nature Sang to Him Night and Day

FRANK STEPHENS

1849-1937

WE READ THE LINES on a monument — a smooth slab set in field stone—which we had just accidentally discovered partially hidden by the creosote bushes and other desert growth to the east of the road. We had driven some 12 miles or so after turning south off California State Highway 78 at Scissors Crossing about half way between the mountain town of Julian and the desert community of Borrego. It was another 12 miles to our destination, Agua Caliente Springs, our favorite winter campground, a San Diego County Park on the Anza Desert. This road is paved now but it was dirt then and pretty washboardy so we were poking along, which is probably why we sighted the monument, or perhaps we were just monument conscious, having stopped only three miles back to look at the Box Canyon Monument.

There are campsites with tables and stoves for many campers at Agua Caliente and more than 50 trailer spaces with light hookups, for a very nominal fee which also pays for the use of the mineral baths in tubs, showers or pools. While it is rather warm here during the summer months, quite a number of people stay here the year around and several have lived here for seven or eight years.

But back to the Stephens Monument. Under the name and dates we read:

AND NATURE THE DEAR OLD NURSE  
SANG TO HIM NIGHT AND DAY,  
SAYING "HERE IS A STORY BOOK  
THY FATHER HAS WRITTEN FOR THEE.  
"COME WANDER WITH ME" SHE SAID  
"AND READ WHAT IS STILL UNREAD,"  
AND HE WANDERED  
AWAY AND AWAY.  
AND EVER THE WAY SEEMED LONG  
OR HIS HEART BEGAN TO FAIL,  
SHE WOULD SING A MORE WONDERFUL SONG  
OR TELL A MORE MARVELOUS TALE.

I liked these lines and I read them over several times, wondering if it were Frank Stephens who had penned them. Had I been up on my poetry I would have known that the lovely lines had been excerpted from Henry Wadsworth Longfellow's "Fiftieth Birthday of Agassiz."

I found this out later and I learned that Frank Stephens had authored a book, *California Mammals*, back in 1906 which was probably the most complete work on this subject ever written to that date. Mrs. Leone M. Hall, supervising Librarian, History and World Affairs, San Diego Library, very obligingly sent me quite a bit of information on this man. Among other things she wrote: "His explorations carried him to places as diverse as Alaska and Mexico, but it was in the California deserts he loved most to be."

On a visit to San Diego recently I saw a picture of Mr. Stephens on the office wall of this city's fine Natural History Museum, and learned that it was way back in the 1890's that Frank Stephens joined the small and struggling San Diego Natural History Society. According to *The Natural History Museum Bulletin*: "As a member of the board of directors, secretary, field collector, taxidermist, author, man of all work—sometimes all of these together—he bore the chief burden of responsibility."

After donating his private collection of some 2,000 birds and mammals to lay the foundation for the modern museum, he served as the museum's first director for several years and in various other capacities throughout the rest of his long life. He was also the first director and one of the founders of the San Diego Zoo in 1916. This zoo we know today as one of the finest and largest in the entire world.

Frank Stephens brought his wife to California from his native New York state in 1876 in a covered wagon. In 1891 he served with the first party to make a biological survey of Death Valley for the U. S. Government. He came to San Diego in 1897 and forty years later, in 1937 he became San Diego's 37th traffic fatality for that year. This eulogy was published in *The Natural History Museum Bulletin*:

"The death of Frank Stephens on October 5 marked the passing not only of the man who did more than any other for the scientific development of the San Diego Society of Natural History, but of an outstanding character in the biology of the west. . . . Not alone for his achievements in science, but for his own modesty and lovable personality will his associates always remember him."

The wife who came west with him died in 1898, and it was the widow of his second marriage who placed the monument to his honor out on the desert he loved so much. This lady thought of moving the monument to the San Diego cemetery where her husband was buried, but she died in 1954, and as the monument is still there where we discovered it on the Anza Desert I presume it will remain.

I think this is quite proper and believe it would be an excellent idea to have the site marked on future

maps of the area, and that signs be placed on the highway nearby so that motorists won't pass it by as we did many times without seeing it. Perhaps mention should also be made on these signs that there is another monument to Frank Stephens which they might like to visit, the Museum of Natural History near the eastern edge of San Diego's lovely Balboa Park.

An active field man at eighty, Frank Stephens is shown here on a collecting trip to San Benito County, California. His companions, seated behind him, are left, A. W. Anthony, sometime correspondent of the California Academy of Sciences (see *Academically Speaking, PD*, September-October 1959, page 33), and Laurence M. Huey of the San Diego Natural History Museum (author of our next-page article) who tripped the shutter.



The Frank Stephens monument in the San Diego County desert back country, with the Laguna Mountains rising starkly in the background. (H. L. Monroe)



## AVIAN ADAPTATION TO THE JET AGE

ON A RECENT APRIL 21 I got from Mr. Philip Klauber the following: "Here is a photo (2 in fact) of a bird which has built a nest some 30 feet away from one of our engine test cells down at Solar Aircraft [San Diego]. We are going to run a little story in the company magazine about it because we're surprised that the bird doesn't mind the terrific noise of jet engine testing, which many citizens do!

"What kind of bird is it? What sex? What Latin name? Does it usually nest in similar places? The nest has 3 eggs."

A glance at the pictures revealed the answer to Mr. Klauber's first three questions. It was a female of the local race of horned or shore lark, *Eremophila alpestris actia*. Three eggs was a normal sized clutch for this species.

The nesting site question was intriguing, to say the least. Horned larks in my experience are shy birds, building their nests on open ground far from human activities; an appointment was made with Mr. Klauber to visit the home of this erratic pair. About 10 o'clock next morning Mr. Klauber escorted me to the north side of the plant to view the nest. A jet engine on the testing block was in full operation. A more noisy place I had never heard. The exhaust sound of a jet-engined plane flying overhead a thousand feet away in almost deafening, but here a pair of horned larks had chosen a nest site about 30 feet

away from the exhaust end of such an engine. Deflectors were placed to throw the exhaust gas flow up, so the ground surface was not disturbed—but the noise!

Here the female sat serenely upon her eggs shaded by a small plant of Indian melilot (*Melilotus indica*) and in full view of all who passed that way.

She flushed when we were about 20 feet away and perched beside her mate on the top wire of a 12-foot cyclone fence about ten yards away. A close look at the eggs determined them to be in an advanced stage of incubation. The pair of birds must have been in this location for over two weeks at least.

Further note of the surroundings in which this erratic pair of birds had chosen to hatch their young revealed that all trucks making deliveries within the high fenced yard of the plant turned around by circling the engine testing block and many wheels passed within a few feet of the incubating birds every day.

Beyond the fence was a paved street over which an immense traffic of motor vehicles passed each day. Paralleling the plant fence and across the highway another high wire fence bounded Lindbergh Airfield where the daily flow of airplanes serving a busy city arrived and departed. The only soil where vegetation was growing was along this airstrip and was the nearest area where horned larks could forage.

Beyond the end of the paved runways over a mile



**LAURENCE M. HUEY**

A Solar Aircraft engineer points to the nest, which is shown in close-up, below, with the female lark. (Solar Aircraft)



## THE POINT REYES PENINSULA . . .

away, a considerable area of annual growth was found. This entire section had been built up within the past 10 years by dredging. On this newly made ground, horned larks had taken up residence and were fairly numerous. How they withstood the terrific air streams thrown by the propellers of the multi-engined planes was a problem I did not consider at the time, though judging from the take-off dust thrown up the horned larks in that area must have had considerable discomfort. But this problem did not interest me as much as that of the pair we were visiting.

Jet engines were often run on this testing block for 24-hour periods. The one there now was set to run all day. The noise was so violent when we were near the nest that, shouting, shoulder to shoulder, we could not understand a spoken word. Retreating around the corner of a nearby shed where with much effort we could converse, we watched the actions of the horned larks.

The female was not long in returning to her nest while the male sat watchfully guarding on the fence.

An on-coming truck forced us to step nearer to the shed and out of sight of the incubating bird. The male bird flushed and flew out across the highway onto the flying field as the truck came by but the female sat tight, the wheels of the vehicle passing within 20 inches without disturbing her.

The male bird, on the airfield, was still in our view and we watched him for a short time to see how he would act. He was not long returning to his vantage point on the top of the high wire fence, this time, however, where he could keep the two interlopers in his view.

He was close enough so that we could see the throat movement as he uttered call notes, though we could not hear them over the engine roar. Experience with nesting horned larks on quiet upland mesas had taught me the alarm note used by the male bird from his vantage point when the nest was under observation or an intruder was nearing the incubating mate. So it was certain, from his actions and the visible motion of his throat, that he was then giving an alarm. It was thus no surprise to see the female roused from her nest and joining him on the fence.

In spite of the terrific engine noise the alarm note given by the male bird was apparently audible to the incubating mate.

A week later I returned, and peering from outside the fence saw the birds feeding young ones. How they got their young out onto safe ground when leaving the safety of the nest is still unanswered. Perhaps the young became traffic victims. At any rate, the voice of the horned lark is decidedly of a pitch well above that of the roaring jet engine and still perfectly audible to the birds. The choice of such a place for a nest site? probably only understandable to that particular pair—one for the birds.

ONLY FORTY MILES from the heart of downtown San Francisco's glass, steel, and stone serrated skyline, part of, yet curiously almost detached from, neighboring Marin County north of the Golden Gate, is a wild "island"—a seashore, moorland, and mountain area of superlative beauty and surprising variety. A roughly triangular piece of land, the Point Reyes Peninsula is currently being considered by Congress as a National Seashore—a place whose beauty will be conserved, and where the people of an increasingly complex and crowded metropolis may come to absorb the dynamic tranquility of the edge of the sea.

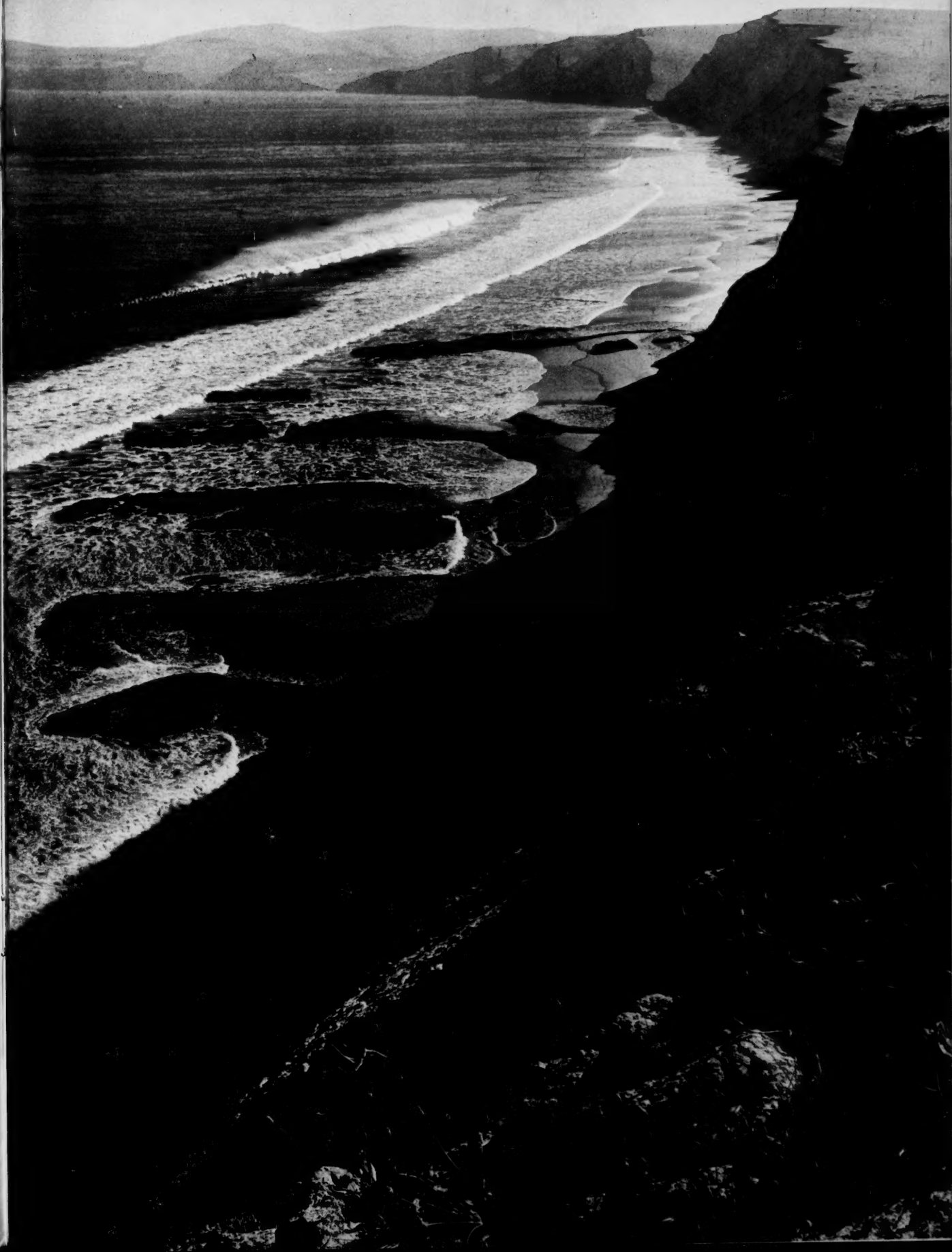
Here in this 50,000-acre triangle are all the ingredients of a great seacoast park. Rock reefs there must be, and renowned is the one that guards the southern apex—Duxbury Reef, graveyard of many ships. Duxbury Point, which sends its black rock understory seaward (the reef has been exposed through geologic ages as the ocean cuts away the softer cap-rock of the Point), shelters the south-facing curve of Bolinas Bay with its quietly picturesque village, Bolinas, from the constant northwest wind, just as, farther north, Point Reyes shelters the comparable curve of Drakes Bay. Tidepools there must be, and this same black rock pavement beneath the cliffs, harshly dominating the outer coast between the two bays as well as the three chief points of the great triangle, is home and haven to teeming numbers and myriad forms of tide-zone animals and plants. Cliffs there must be, and the bold tawny-white bluffs overlooking the ocean here so struck the ship's company of the *Golden Hind* with nostalgic recognition that "New Albion" was the obvious name for this land. And beaches there must be, above all, for the special delights of stretching out in the sun, beachcombing, or the other forms of happy escape that lure the largest numbers of people to the seashore. All these necessities of a coastal park, and many more, are superbly here.

Those whose business it has been to evaluate this peninsular triangle, to judge its fitness for park status—federal and state park officials, congressmen, the Governor of California, the Secretary of the Interior—have taken the helicopter view. Going north from the southern apex of Duxbury Point, they have peered down on the offshore rocks, and quickly seen the rugged headlands to and beyond Double Point give way in a few miles to the graceful, sweeping curve of Drakes Bay, limned by its stretch of bright sand for nine miles, and accented by the whitish, truncated

Drake's Beach from a headland above it shows the consequence of differing hardness in the rocks of its shore. The harder pavement material running into the water has withstood the pounding surf better than the soft stuff of the rapidly eroding cliffs.



N



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cliffs.

...HAS BEEN CALLED  
AN ISLAND  
IN TIME

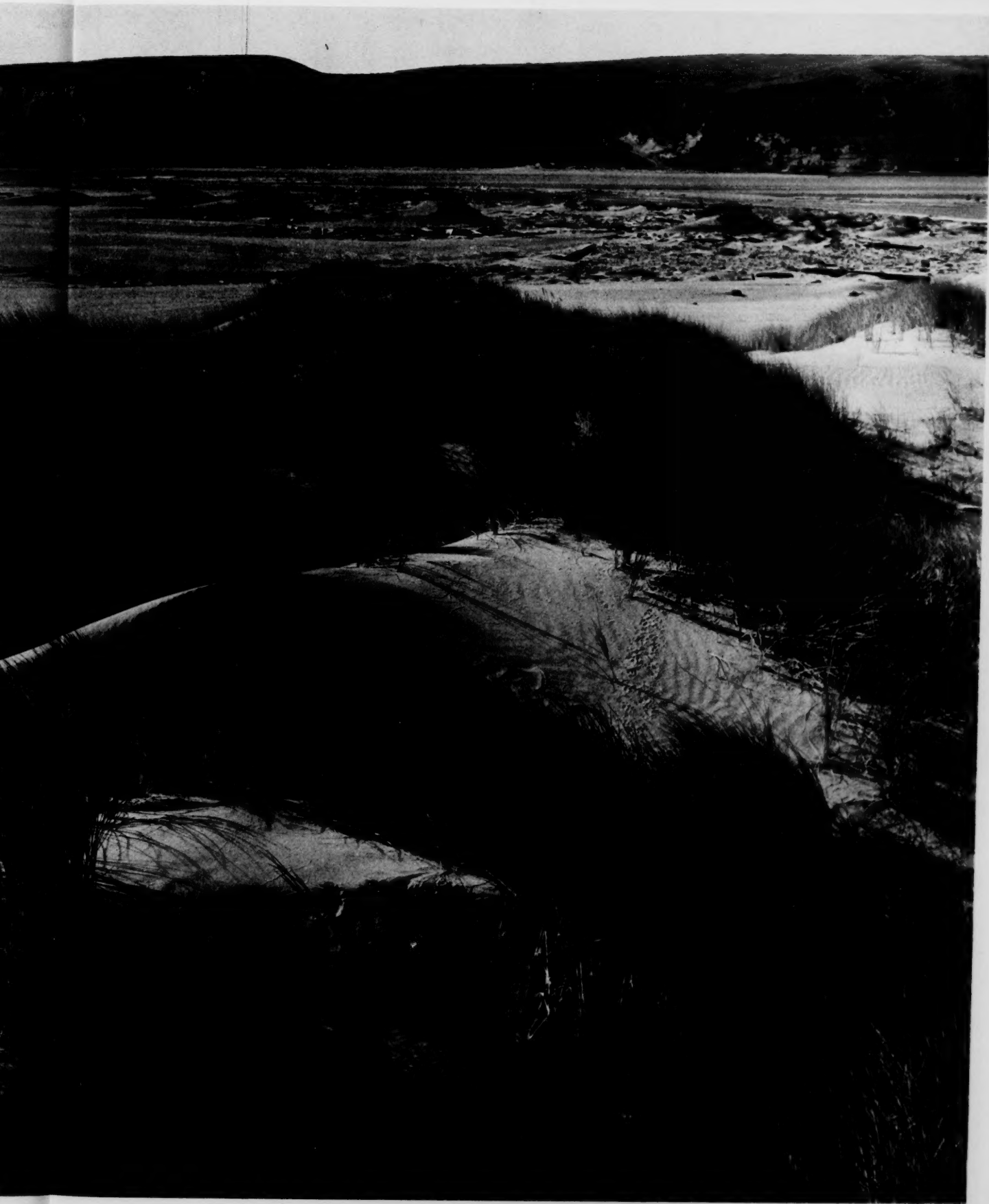
PHOTOGRAPHS BY

PHILIP HYDE

TEXT BY P. H. & D. G. K.

The currents along the shore have moved these sands some hundreds of yards north of where they were a century ago, thus elongating a lovely sandspit that forms the central two or three miles of the great arc of Drake's Beach. The long, narrow lagoon behind the spit is a haven for wading birds and various shallow-water animals.







Contrast: the quiet water and smooth sand dunes of Abbott's Lagoon (ABOVE), and the surf-swept rocks guardian McClure Beach (RIGHT).

abutments of rolling ridges. They have caught their breath at the abrupt landform climax which pulls this fine sweep of sand beach up short against the hard granite upthrust of Point Reyes' sheer, straight ridge, capping the triangle's southwest apex and guarding its softer rocks from the ceaseless pound of the Pacific. Swinging around the western tip of this ridge, where the Point Reyes Lighthouse, commanding 200 degrees of arc, has both warned and guided to landfall many generations of Golden Gate-bound mariners, the 'copper has given its passengers the sudden twelve-mile straightaway of the outer Point Reyes Beach, leading northward, broad and white, to the final apex of To-


males Point. This highway of gleaming sand is curbed on the left by endless lines of giant combers, on the right by dunes and the low cliff face of the Point Reyes moorland. Continuing northward to Tomales Point they have, at Tomales Bay's narrow entrance, made the sharp turn down the last side of the triangle, guiding southeasterly along the peninsula's backbone, Inverness Ridge. This is at first a broad, rolling upland of chaparral and grass, increasingly studded with dark Bishop pines, then, farther south, a heavily wooded high ridge whose summits—Mt. Vision, Point Reyes Hill, Mt. Wittenberg—command fine views of the peninsula, as well as the Marin "mainland" east





IGHT).

and south to San Francisco Bay. In contrast to the wildness of the ocean shore and the loneliness of the dairy ranches of the open moorland, the airborne visitors have glimpsed the peninsula's population center, the village of Inverness, nestled in the lee slopes of the ridge with its feet in Tomales Bay. It seems a cozy and picturesque leftover from uncrowded decades before the last two, with its cottages along curving roads that climb through the Bishop pine woods and with its bay-front of piers walking on stilts over tidal flats, small boats appended to their extremities. This Tomales Bay is itself a thing of note, lying as it does in a trough of the San Andreas Fault-line, and having

witnessed at its head in 1906 a sudden snapping of the land which displaced a road, a fence, and other objects by twenty feet. And as they flew southward to complete the triangular course, they witnessed the beauty of virgin Douglas fir forest being gashed by the logger's chain saw and bulldozer. Perhaps they reflected, on landing, over the conflicts in men's needs—especially that of short-term economic gain opposed to long-term values: recreation, the esthetic experience of scenic beauty, the intellectual challenge of solving nature's unknowns, and the spiritual strengthening which solitude and quiet give to those harried by the jangle and rush of modern life. 



*Just as California reveres Father Junipero Serra, Arizona honors  
Father Eusebio Francisco Kino, S.J., and this year celebrates the 250th  
anniversary of the death of the great missionary who founded the*

## WHITE DOVE OF THE DESERT

PHYLLIS W. HEALD

*Photographs by* WELDON F. HEALD

**M**ISSION SAN XAVIER DEL BAC is situated eight miles southwest of Tucson, Arizona, on its own small reservation.

Although conceived in 1693\* by the famous missionary priest, Father Eusebio Francisco Kino, the present church was not built until 1783. Fourteen years of arduous labor went into its construction. Most of the work was done by Christianized Pimas and Papagos whose ancestors had settled in the fertile Santa Cruz valley long before the white man came.

Of Spanish Churrigueresque design and filled with carvings and paintings inspired by artists of Spain, this "White Dove of the Desert" is an island of tranquility where thousands of visitors come each year to pray, admire, and walk along its quiet paths amid century-old cactuses and palo verde trees.

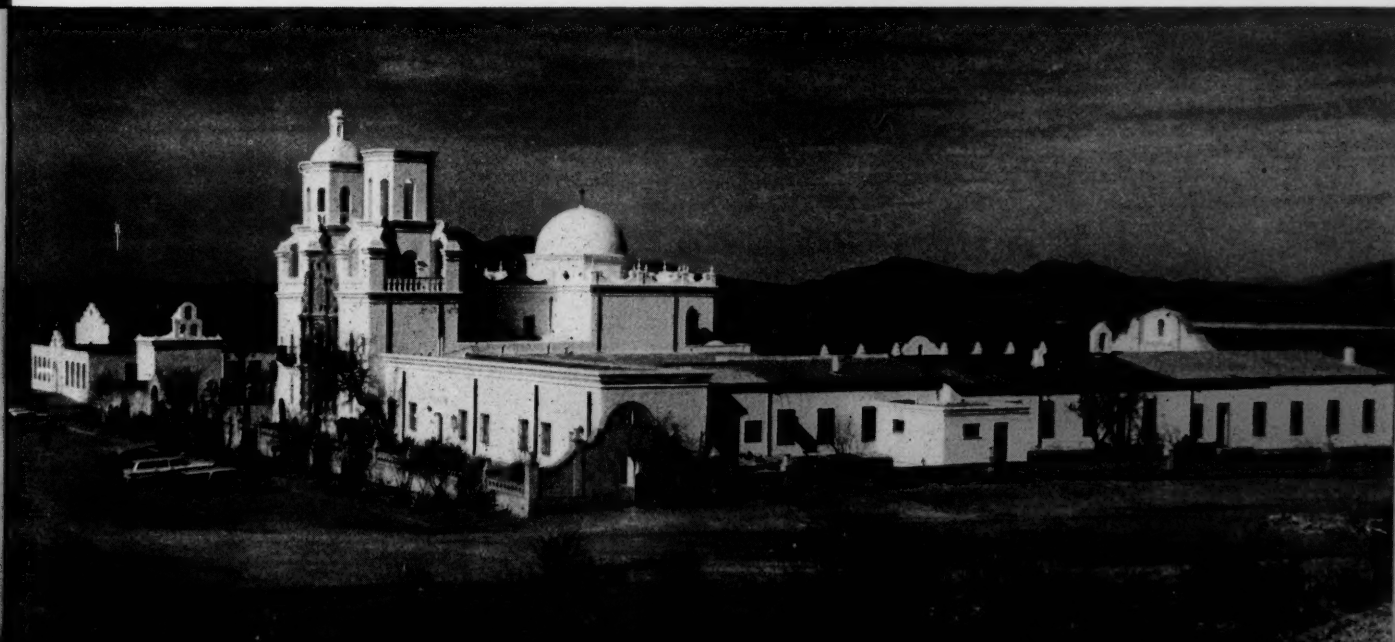
Possibly one reason it offers such a feeling of warmth and inspiration is that the church has always remained active. After 177 years it is still serving its God and its people. Many of the present parishioners are fifth and sixth generation descendants of those who helped build it almost 200 years ago.

San Xavier del Bac is open to the public. Sight-seeing trips are conducted daily through church and grounds by the Franciscan friars who are in residence. They will make you welcome.

\* The foundations of the original church were begun by Fr. Kino on 28 April, 1700.—Ed.

Keeping the main lines of the buildings of San Xavier del Bac cleanly rectangular and free of ornamentation, architects of the splendidly isolated mission in the Arizona desert let themselves go in the ornate façade. Note the shell above the balcony doorway.

It would be interesting to know the story behind the unfinished east tower.



**Fig. 5.** Still keeping part of a sea-urchin shell in her forepaws, a female sea otter catches a brief "cat-nap" before making another food dive.



**sleep...**

## **on the deep**

**KARL W. KENYON**

**photos by the author**

**H**OW DOES A FUR SEAL SLEEP? We are often asked this question by those who have heard that the Alaska fur seal remains far at sea from the time it leaves the Pribilof Islands on its 3,000-mile migration each fall until it returns to the breeding grounds the following spring.

The accompanying photographs illustrate how the fur seal bends its hind flippers forward and holds them in place under one front flipper while sleeping soundly (fig. 1). The body is thus bowed and the nose is held above the sea's surface (fig. 2). On calm days the ring formed by the raised flippers may be seen for a mile or more. Pelagic sealers of the 19th century termed such sleeping seals "jugs"—from their resemblance to the handle of an old-fashioned jug (fig. 3). The sealers approached such a "sleeper" closely in a small boat and harpooned it before it awoke. Even a ship may glide in close enough to allow hunters an easy kill with a shotgun. Early sealers were elated when they saw the sea dotted with "jugs." It meant a big day's take. Even while the seal appears deep in sleep, occasional gentle movements of the submerged front flipper keep the seal's nose turned away from the surface ripples of a breeze.

In quite choppy water seals may still sleep, but in a different position. The seal lies on its side, trailing the hind flippers and propelling its body gently forward with one front flipper, nose away from the wind and chop. It may move at a speed of one or two miles per hour. Even though constantly in motion, one such "sleeper," its eyes tightly closed, was approached to within a few feet and easily taken with a hand harpoon by a Tlingit Indian sealer I was with in Alaskan waters.

Although surrounded by water the seal sleeps dry and warm. Dense fur fibers beneath the guard hair enclose a blanket of air. During its lifetime, except for the bare leathery flippers, water never touches its skin.\* Sometimes the sleeping seal holds one foreflipper vertically above the surface while sleeping; perhaps the black skin absorbs appreciable warmth from the sun, helping to lull the animal to comfortable drowsiness. Even when held in captivity, where dry land is easily available, this pelagic seal prefers the water's calm surface for a nap.

The sea otter, unlike the fur seal, is primarily an

\* See: "Seal Skins Alive" by Victor B. Scheffer, *Pacific Discovery*, May-June 1960, pp. 2-8.

➔ **Fig. 3.** The ring formed by the hind flippers bent forward and held in place by one foreflipper won from early sealers the name "jug" for such sleeping seals. On calm days with glassy sea "jugs" can be seen a mile or two from the deck.





† Fig. 1. Northern fur seal, adult male, from directly overhead. Sound asleep, he holds his bent hind flippers in place under one foreflipper, leaving the other foreflipper free to shift his position slightly. A blanket of air enclosed in the fur helps give the seal buoyancy.



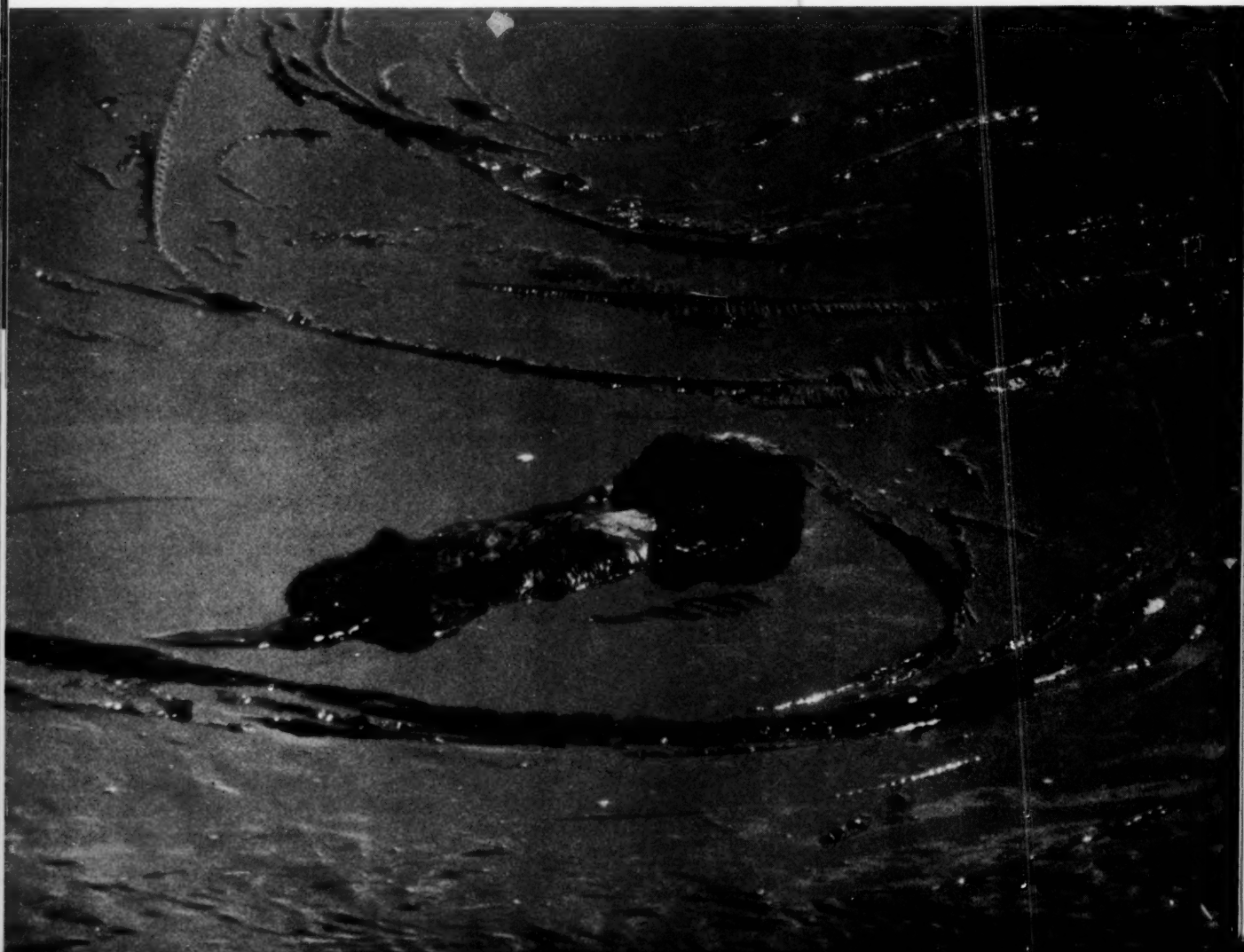
† Fig. 2. With the body of a fur seal bent as shown here and three flippers above the surface, its nose is held out of water for breathing. Occasional movements of the submerged foreflipper keep the seal's nose away from choppy water in a breeze.



▲ Fig. 6. Sea otter pup about two weeks old sleeping on mother's chest and belly while mother propels herself forward with her hind flippers.

▼ Fig. 4. A young adult sea otter, after folding its hind flippers over its abdomen, places its forepaws over its eyes and rests in a calm kelp bed in an Amchitka Island cove in the Aleutian Islands.

animal of coastal waters. But like the fur seal, it prefers to spend most of its time afloat. Unless seeking the shelter of shore rocks during storms, it chooses a sheltered kelp bed, cove, or bay as a resting place. More buoyant than the fur seal, because its longer fur encloses a proportionately thicker blanket of insulating air, the sea otter floats high in the water and invariably lies on its back to sleep. It often chooses to rest among floating strands of kelp, which it sometimes pulls over its chest to prevent currents or breezes from carrying it ashore or into rough water. It folds its furry hind flippers over its abdomen, tucks its chin on its chest, forepaws over its eyes, and naps through sunny afternoons (fig. 4). If the dozing otter wishes to change its position slightly it simply sculls gently with its flattened tail. After a particularly hearty meal on a warm still day an otter may "cat-nap" briefly on open water before returning to feeding activities (fig. 5). The sea otter pup probably enjoys the most comfort of all deep-sea sleepers. Cradled on its mother's warm chest and protected from cool breezes by its long fur it rides while it sleeps without a worry in the world (fig. 6).



## THE GREAT ASTRONOMICAL DISCOVERY OF 1960

THE ASTRONOMICAL UNIVERSE has grown, in the last 60 years or so, in size beyond all previous estimations. Evidence for the spatial extension of our visible universe has been provided by the construction of the great telescopes of the 20th century—the Hooker 100-inch telescope of the Mount Wilson Observatory, the Hale 200-inch telescope on Palomar Mountain, and more recently, the 120-inch telescope of the Lick Observatory, Mount Hamilton. Moreover, the development of radio astronomy and the construction of the giant radio telescopes of the last decade have aided astronomers in pushing back the frontiers of cosmology. In fact, the first indications of the great discovery of 1960 came from the radio astronomers.

The story of this discovery must go back over 10 years when radio astronomers in Cambridge, England detected a weak radio source in the constellation of Boötes in the spring skies. Unfortunately, radio telescopes then in use were greatly deficient in resolving power and a precise determination of the object's position was impossible. As better estimates became available, Dr. Rudolph Minkowski of the Mount Wilson and Palomar Observatories attempted to find and photograph the unidentified object with the 200-inch telescope. Although the resulting photographs showed numerous distant galaxies apparently forming a cluster, the position of the object was still not precise enough to decide which object if any in the field was responsible for the radio signals.

Recently, with the aid of a new radio telescope at Cambridge, England and twin 90-foot radio telescopes of the California Institute of Technology radio astronomers were able to pinpoint the object with much greater accuracy. Using the data available from these radio observations, Dr. Minkowski again photographed the area with the Hale 200-inch telescope. After two hours of exposing, he obtained a photograph of the mystery object appearing as a tiny blurred speck surrounded by numerous ill-defined and fainter dots. All of the objects are thought to be extremely distant galaxies.

After the object had been located, photographed, and identified, the next important thing was to get its spectrum. This is an even more important step than photographing it for spectra of such objects reveal their velocities in space and ultimately their distances from our own Milky Way Galaxy. The spectrum of a star, nebula, or galaxy is crossed by numerous dark lines representing the absorption of light of specific wave lengths. This absorption is produced by the chemical elements that make up these celestial bodies. By measuring the precise positions of these lines and comparing them to known laboratory spectra, the astronomer can determine the chemical constituents of these objects. Moreover, the relative intensities and widths of these lines will reveal the temperatures, densities, and — indirectly — the true luminosities of such bodies.

If the object under observation is moving either toward or away from us, its motion will be revealed

by a shifting of the dark lines in the spectrum either toward the violet or the red end, representing motion toward or away from the observer, respectively. This phenomenon is called the Doppler Effect in honor of its 19th-century discoverer. By measuring the amount of shift by using a stationary comparison spectrum (usually of iron), the astronomer can determine the velocity of the object. In 1924, astronomers at the Lowell Observatory in northern Arizona found that many of the galaxies showed a shift of their spectral lines toward the red end denoting a general recession of these galaxies. By 1940, it was generally concluded that almost all of the galaxies in space were in recession. This "red shift" as it came to be called is interpreted by many astronomers to mean that the entire universe is in expansion much like dots on an expanding balloon.

Through measurements of velocities and distances of the closer galaxies, Edwin Hubble, a Mount Wilson astronomer, announced in 1929 a definite relationship between their velocities and distances: the greater the distance of these galaxies, the greater is their velocity of recession. Figure 1 shows the spectra of six galaxies. Note that the broad, dark lines are shifted toward the red end of the spectrum indicating increasing velocity with their distances from us. The relationship appears to be linear, meaning that if the distance doubles the velocity of recession must also double.

It is extremely difficult to obtain spectra of such faint objects even with the 200-inch telescope for the light of the night sky tends to produce its own spectrum masking the galaxy's spectrum. Minkowski exposed the slow photographic plate for four and a half and nine hours with the 200-inch before he finally obtained adequate spectra of the mystery object. By comparing the spectral lines with the comparison lines, the largest red shift ever recorded was seen. Lines normally in the invisible ultraviolet appeared clearly in the green. Preliminary calculations showed that the object was receding with a velocity of 87,000 miles per second or 46 per cent of the velocity of light! According to the velocity-distance relationship, this represents a distance of six billion light years. Before this discovery, galaxies had been detected to a distance of about two billion light years. Consequently, in 1961, our visible universe was extended three times its previously observable radius and therefore 27 times its previous volume!

Questions still remain from this discovery. Do the fainter objects surrounding this brighter galaxy represent an even more distant cluster of galaxies or does the bright galaxy belong to this cluster? Many clusters of galaxies are known to possess a few galaxies with luminosities far surpassing the average luminosities of the cluster itself.

Astronomers are still not quite certain as to the nature of the intense radio emission from such galaxies. Theory shows that the intensity of radiation falls off immensely with increasing wave length. Also, all radiation falls off inversely as the square of its

distance. Since radio waves are quite long relative to light waves and since these objects are extremely far away from us, their energies must be very low—too low to be picked up by radio telescopes on earth. But the fact remains that we do pick them up. In order to receive such signals with present radio telescopes, they must radiate with a power of about 10,000,000,000,000,000,000,000,000,000,000,000 watts! As W. Baada of Wilson and Palomar Observatories reasoned in 1951, only a collision of two galaxies could produce such powerful radio signals. This was soon proven to be the case with a pair of galaxies in the constellation of Cygnus. The 1960 source could very well be two colliding galaxies but further

research along these lines is needed before definite answers can unfold.

As man's technology improves, his universe seems to grow with it. At the turn of the century, most astronomers thought that our universe was contained in our own Milky Way Galaxy. Few astronomers were willing to admit that those faint specks on their photographic plates were other Milky Way systems far beyond our own. The first 50 years of the twentieth century has produced immense strides in astronomy. We look in wonder at the present size of the universe and we find ourselves speculating as to what the next 50 years will bring to our concepts of this ever-changing universe.

O.R.N.

Fig. 1.

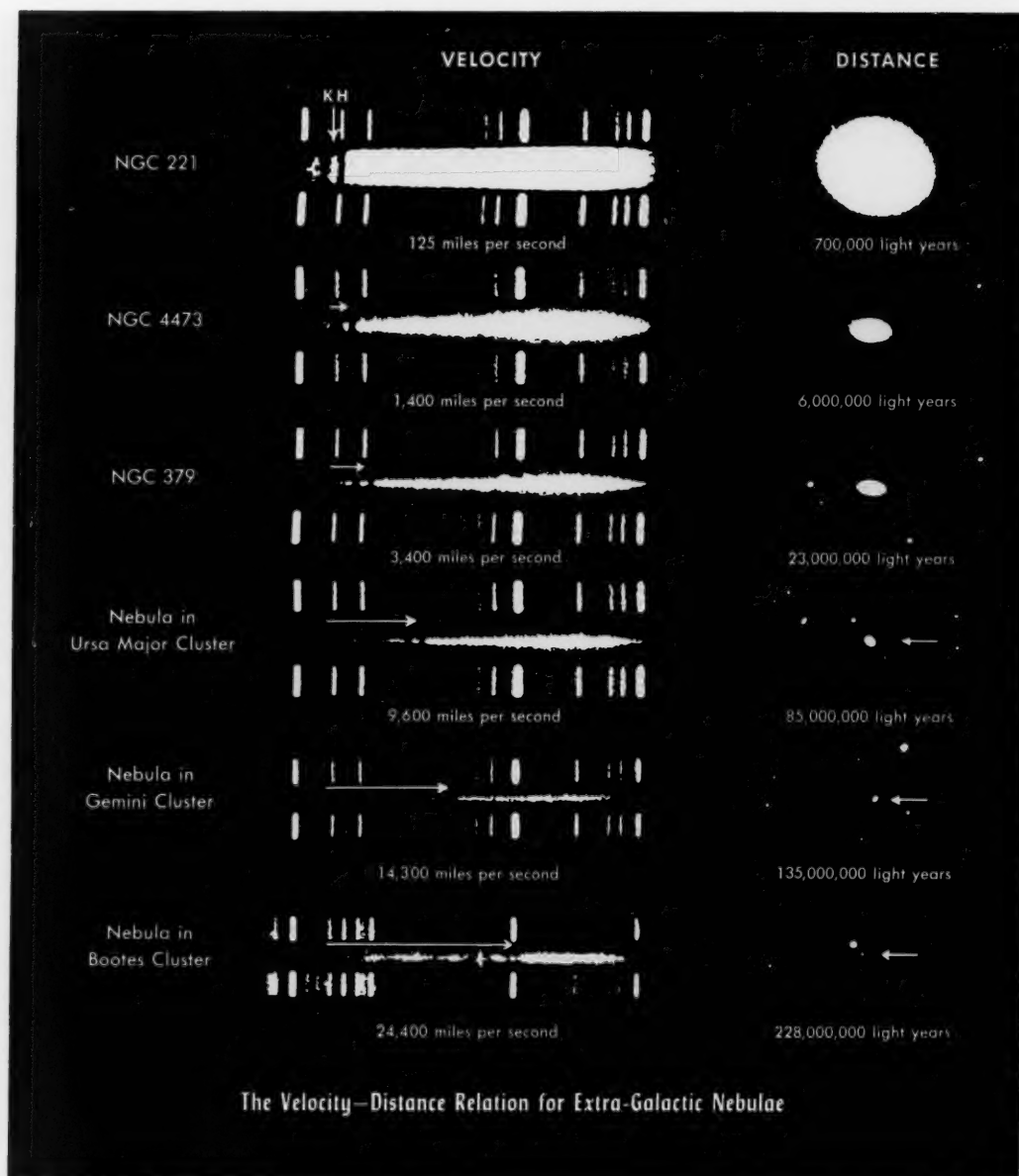






Fig. 2. Distant cluster of galaxies in the constellation Coma Berenices, which astronomers say is over 30 million light years away. Note two colliding galaxies (bean-shaped object) in upper right area. (Photo and chart, Fig. 1, courtesy Mount Wilson-Palomar Observatories)

## SKY DIARY

May, June, July, 1961

(All Times are PACIFIC STANDARD TIME)

### Phases of the Moon

☾ Last Quarter	May 7	7:58 A.M.
☾ New Moon	14	8:55 A.M.
☾ First Quarter	22	8:19 A.M.
☾ Full Moon	30	8:34 P.M.
☾ Last Quarter	June 5	1:19 P.M.
☾ New Moon	12	9:17 P.M.
☾ First Quarter	21	1:02 A.M.
☾ Full Moon	28	4:38 A.M.
☾ Last Quarter	July 5	7:33 P.M.
☾ New Moon	12	11:12 A.M.
☾ First Quarter	20	3:14 P.M.
☾ Full Moon	27	11:51 A.M.

### The Planets

**Mercury:** Reaches superior conjunction on May 1. It can be seen in the western sky after sunset moving gradually east of the sun throughout May. By June 1, it arrives at greatest eastern elongation of 23°. Mercury will disappear from the evening sky when it reaches inferior conjunction on June 27. By mid-July, the small planet will be about 20° west of the sun and rising over an hour before the sun.

**Venus:** Can be seen low in the eastern sky just before sunrise on May 1. By May 16, it attains its greatest brilliancy of -4.2 magnitude and will then show a thin crescent phase as seen through binoculars. Greatest western elongation is reached on June 20 when it will be 46° west of the sun. Throughout June, Venus climbs higher in the morning sky but steadily decreases in brightness and apparent size in July as it moves away from the earth.

**Earth:** The first day of summer begins on June 21 in the Northern Hemisphere while winter begins in the Southern Hemisphere. The sun is overhead on the Tropic of Cancer and is then at its maximum northern declination of 23° 26'.

**Mars:** Reaches its greatest distance from the sun on May 5. It appears as a bright orange object in Cancer. The red planet remains in Cancer throughout May but slowly moves eastward, entering Leo in June and remaining there through July. Mars diminishes in brightness until it is an inconspicuous object shining at magnitude +1.9 by the end of July, then setting about 3 hours after the sun.

**Jupiter:** Is a conspicuous object in the morning sky during these three months. It is found in the constellation of Capricornus at this time. By the end of May it rises about midnight shining at magnitude -1.9. July 25 marks the opposition date of Jupiter with the sun. The planet then rises at sunset and is a prominent object all night.

**Saturn:** Follows close behind Jupiter throughout the year but, because of Jupiter's faster motion, Saturn is slowly left behind. The ringed planet is in Capricornus all year long rising about the same time as Jupiter. The close proximity of these two planets afford an opportunity to positively identify Saturn among the stars.  
O.R.N.

ON THIS DAY of high tension living, with ever faster intercontinental flights, ever higher flings into space, and ever wider and faster freeways, the psychiatrist's couch and a varied assortment of "happiness" pills or tranquilizers seem to be necessary for those who cannot keep up the pace. Some physicians prescribe a return to nature for victims of today's mad race to keep up with the Joneses and other assorted subdivision neighbors.

An hour a day watching birds, photographing wildflowers, or collecting butterflies, rocks, or sea shells may have more therapeutic value than a trip to the psychiatrist or a whole bottle of pills. And the study of nature is one activity that the entire family can share. Nature's offering of objects for study is great and varied. Whatever interests you in the out-of-doors will amply repay any time invested in its study. You may wish to specialize—make a detailed study of some small group of plants or animals, or you may wish to become familiar with a large number of species of different groups that make up your local fauna and flora. After you know their names you may wish to learn something of their life histories or habits and then something of their relationships with other plants and animals.

As you delve into the subject of your choice you will find many ways to include various members of the family in your hobby. To name but one example—an interest in nature can make any automobile trip more rewarding. Any number of games can be devised to help pass the time away and at the same time test the nature knowledge and alertness of each member of the family. An "alphabet" game might consist of naming a plant or animal sighted along the road beginning with each letter in order from A to Z. The first person to spy and announce correctly a plant or animal name for a letter of the alphabet would receive 10 points. If someone incorrectly identifies the plant or animal he could be penalized 5 points. If the family is sufficiently advanced they might want to use scientific names as well as common names, and bird watchers would undoubtedly include songs as well as sight records. In the case of a few letters it might be desirable to work out substitute requirements since Xiphosurans and Zebras are not too often seen along the high-

way! But the rules can be kept flexible to fit the circumstances. When the alphabet is completed scores are tallied and a winner declared.

At first thought you might consider it difficult to identify plants and animals from a speeding car. As you try the game though, you soon learn what to look for and to call out with confidence: "A" for Anise Swallowtail, "B" for Box Elder, "C" for California Buckeye, "M" for Mockingbird, or "Y" for Yellow Warbler.

And if occasionally it is necessary to stop the car in order to check on a doubtful identification it is probably just as well. It is quite likely that the driver is in need of a rest by now and the passengers will undoubtedly welcome the opportunity to stretch their legs a bit.

Two books are worth mentioning as valuable aids to help introduce the family to nature. *Exploring Nature with Your Child: An Introduction to the Enjoyment and Understanding of Nature for All* by Dorothy Edwards Shuttlesworth (Greystone Press, New York, 1952). Mrs. Shuttlesworth, former editor and founder of *Junior Natural History Magazine*, provides an excellent blueprint for family participation in and enjoyment of many facets of nature.

*Common Native Animals: Finding, Identifying, Keeping, Studying* has been released recently by the Chandler Publishing Company of San Francisco. Written by M. F. Vessel and E. J. Harrington of San Jose State College's Science Education Department, it is attractively illustrated by Dorothy Thurman. A special feature consists of eight full-page color plates illustrating common habitats. The book is handsomely designed, neatly printed and is available in cloth or paper binding.

Although intended primarily for teachers and youth leaders, this book is very highly recommended by your nature columnist as an introductory guide for the family wishing to know real "togetherness" through sharing in pursuit of a common hobby—the study of nature. There are enough projects described here to keep Dad, Mom, and the children busy for years to come. And surely the children brought up with full appreciation of what the out-of-doors has to offer will never have need of the psychiatrist's couch or the bottle of "happiness" pills!

**A Field Guide to Western Birds.** By Roger Tory Peterson. Houghton Mifflin Company, Boston. 1961. xxv + 366 pp., illus. \$4.95.

**Handbook of California Birds.** By Vinson Brown and Henry G. Weston, Jr. Naturegraph Company, Healdsburg, Calif. 1961. iv + 156 pp., illus. Paper, \$2.95; cloth, \$5.00.

**Birds of the West.** By Ernest Sheldon Booth. Outdoor Pictures, Escondido, Calif. 1960. ix + 413 pp., illus. \$5.00.

**California Spring Wildflowers.** By Philip A. Munz. University of California Press, Berkeley. 1961. 122 pp., illus. Paper, \$2.95; cloth, \$4.75.

This spring sees publication of several books ideal for carrying along with you on family outings—some useful for rapid field identification en route; others more useful at stops.

Since 1941 Roger Tory Peterson's *A Field Guide to Western Birds* has been the standard identification manual for western birds. Making use of what is now called the "Peterson System," the illustrations feature lines pointing to the most important identifying characters for each species. A revised edition has been promised for some years and is at last available. I'm sure all bird watchers will agree that it is worth waiting for. All illustrations in this edition are new—60 plates in all with 36 in color (only 6 color plates in the first edition) plus numerous text illustrations. Species accounts have been expanded and the birds of western Canada, Alaska, and Hawaii are now included.

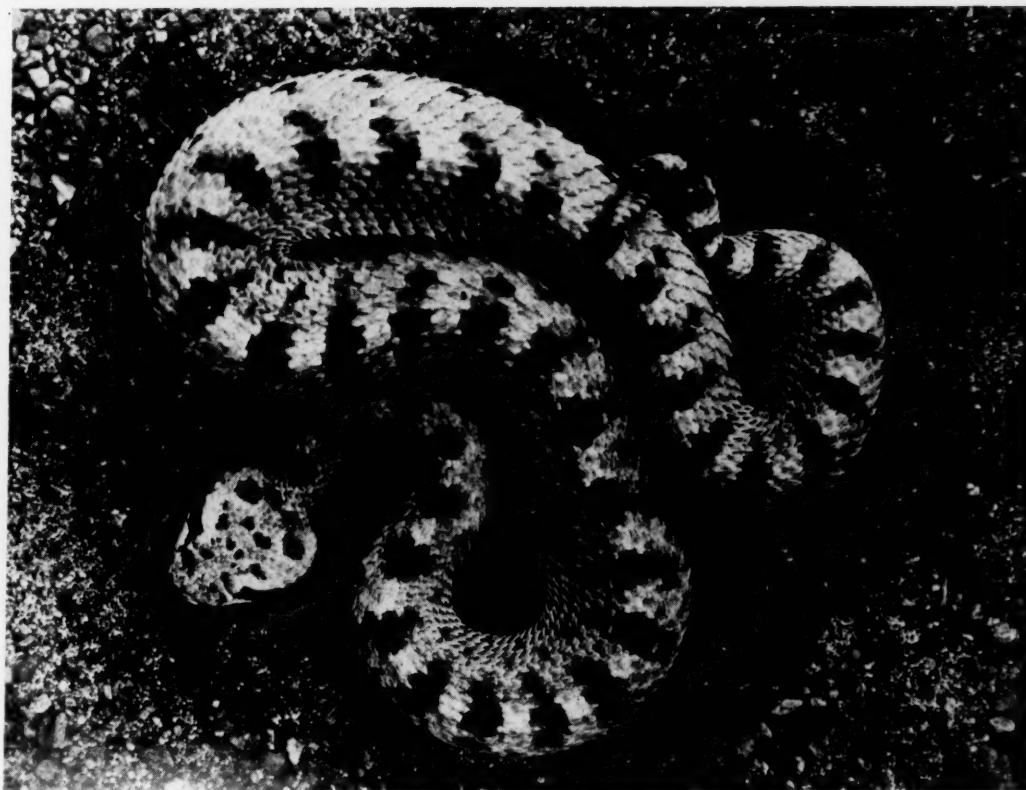
Also just out is a guide especially for residents and visitors in California. *Handbook of California Birds* by Vinson Brown and

Henry G. Weston, Jr. is the only book currently in print devoted solely to California birds. The opening chapters contain a great deal of information of particular interest to the beginning bird watcher about such things as bird sounds, flight habits, feeding habits and bird habitats. This guide relies on a verbal description of the important identifying characters coupled with an illustration on the facing page.

For a completely different approach to bird identification you might like to try *Birds of the West* by Ernest Sheldon Booth. Now available in a revised 3rd edition, it consists primarily of identification keys. The keys are simply written for field identification of the adult male bird to species. All birds from the western edge of the Great Plains to Alaska and Hawaii are included. There are eight color plates, many black-and-white illustrations.

If wildflowers are your interest you will certainly want a copy of *California Spring Wildflowers* by your side when you are in the field. Common flowers from the base of the Sierra Nevada and southern mountains to the sea are included. Designed for easy identification by the amateur, this book is arranged in sections according to the color of the blossom. For instance, the user, with flower at hand, may turn to the section entitled "Flowers Blue to Violet" and then proceed through that chapter species by species until the flower is found. Species descriptions and distributional data occupy the inner half of the page; black-and-white drawings of the same species the outer half. Ninety-six color photographs are also included.

All in all, the western nature hobbyist interested in field identification is well provided for, this spring. A. C. S.



(Photo by Arthur and Edgar Smith)

## What Do You Know About Nature?—REPTILES

STUDY THE PICTURE carefully, then complete the following statements by circling the letter that indicates your choice of correct ending, or "true" or false." Then turn this page and see how much you know about reptiles. Allowing ten points for each correctly answered question a score of 100 is excellent, 80-90 is good, 60-70 is average and 50 or less is poor.

1. This reptile is: **A** a rear-fanged snake. **B** a true viper. **C** a colubrid. **D** a pit viper.
2. Its common name is: **A** copperhead. **B** chuckwalla. **C** sidewinder. **D** timber rattlesnake.
3. It is found: **A** throughout the United States. **B** only in Florida. **C** only in Texas. **D** only in the southwestern United States.
4. It is poisonous to man. **A** true. **B** false.
5. The number of rattles at the tip of the tail is an accurate indication of the age of this reptile. **A** true. **B** false.
6. This reptile always gives a warning buzz of its rattle before striking. **A** true. **B** false.
7. This reptile cannot strike unless it forms its body in a coil first. **A** true. **B** false.
8. This reptile is usually found: **A** in forests. **B** in

swamps. **C** in sandy deserts. **D** in grassy meadows.

9. The chief food of this reptile consists of: **A** small birds. **B** bird eggs. **C** insects. **D** small lizards and rodents.

10. The best procedure to follow if bitten by this reptile is: **A** take a double shot of whiskey immediately. **B** treat the wound with potassium permanganate. **C** ignore the bite as no treatment is necessary. **D** call a doctor immediately if possible and apply the first aid treatment as recommended by the American Red Cross or Boy Scouts of America.

**Further Reading:** See "The Sidewinder: Master of Desert Travel" by Raymond B. Cowles (*PD*, March-April 1953, pp. 12-15). And if your interest grows to book length, the definitive work is *Rattlesnakes: Their Habits, Life Histories, and Influence on Mankind*, by Laurence M. Klauber (University of California Press, Berkeley and Los Angeles, 1956) in two volumes totaling 1476 pages with 243 illustrations.

**Answers to Reptile Quiz:** 1. **D** a pit viper. 2. **C** sidewinder. 3. **D** only in the southwestern United States. 4. **A** true. 5. **B** false (a popular misconception). 6. **B** false (another popular misconception). 7. **B** false (a popular misconception about rattlesnakes in general; this particular species rarely coils before striking). 8. **C** in sandy deserts. 9. **D** small lizards and rodents. 10. **D** call a doctor immediately, if possible, and apply first aid treatments as recommended by the American Red Cross or the Boy Scouts.

"On Rediscovering the Earth"

(Continued from page 1)

march Xenophon, Pytheas, Chang Ch'ien, Al-Masudi, Eric the Red and his sons, the Polos, Ibn Batuta, Diaz, Columbus, Cabot, Magellan, Cortés, De Soto, Pizarro, Mendaña, Drake, Frobisher, Davis, Hudson, Tasman, La Condamine, Cook, Mackenzie, La Pérouse, Flinders, Mungo Park, Humboldt, Lewis and Clark, D'Urville, Ross, Franklin, Darwin, Frémont, Wilkes, Livingstone, Bates, Wallace, Speke, Nordenskjöld, Stanley, Przhevalsky, Nansen, Peary, Hedin, Stein, Scott, Shackleton, Amundsen, Mawson, Stefansson, Byrd, Fuchs, Hillary, and a whole host of others who filled in the blanks on the map of our planet. (Speaking of maps: those specially created for this book, in brilliant color, relief, and detail, are beyond praise; and the illustrations from contemporary documents, as well as some modern photographs, are wonderfully rich in effect.)

Few blanks remain on the terrestrial map. Only Antarctica holds land of any size waiting discovery. And that land is known to exist; it just hasn't been landed upon or tracted into and examined in detail. But rediscovery can happen anywhere, any time—and any one can do it. When you go somewhere you have not been before, you have discovered that place; and it doesn't make a bit of difference whether you are the second or the hundred millionth person to set foot there. The point is well made in Rutherford Platt's opening sentence to *Wilderness: The Discovery of a Continent of Wonder*—"America was the biggest surprise in the history of man." Platt doesn't mean the red man—prior to 1492, he hadn't entered history in terms of the conventional Western concept.

The new book by the author of *This Green World* invites us down another road to rediscovery—to the literary rediscovery of North America's past. Platt would have us recapture the state of sheer wonderment that gripped Europe when the news broke (comparable, today, to the news of a great new continent not even dreamed of, four centuries ago, might be the sudden awareness that we had two moons instead of one). And then, after taking us back long before any man into the time of the continent's building and becoming a living wilderness of magnificent plant and animal communities, he would have us break trail with the explorers. We share the elation, the astonishment, the hardship that went with Viking and conquistador and voyageur, with priest and pirate and plainsman, with trapper and trader and wagon-train driver as each confronted some part of the multiform face of America's pristine wilderness. Returning to today, we can say with the author, "I have just come out of the American wilderness where I have been lost for about a thousand years."

It is the wilderness that is now all but forever lost; but as you hit the summer road you will find its rediscovery a worthwhile exercise for your imagination. (Mr. Platt's conclusion, though aside from our theme here, will strike home to many PD readers: "I find myself holding a few fragments of a living wilderness that was the depth of our being and the wealth of our land—and these are slipping through my fingers.")



Other books to be mentioned here are shots in the dark—sure to hit some spot some reader has in mind for summer rediscovery. Going southward about 450 miles from PD's point of origin? You will find Remi Nadeau's *Los Angeles: from Mission to Modern City* a smoothly running account—happily not smoothed to C. of C. specifications—of how the City of the Angels swelled in one century to its present incredible, not exactly angelic bulk. Or is it about twice

that far north you will be heading? An equally fine piece of journalism is Murray Morgan's *Skid Road: An Informal Portrait of Seattle*. The rough-and-tumble, also short history of the Puget Sound city is as entertaining as fiction and sometimes no more believable in its actuality. If you are planning to cross, or stay in the Sierra in the Donner Pass area, a new account of the Donner tragedy, *For Fear We Shall Perish* by Joseph Pigney, proves that the well known story can be freshly told. This one makes the unhappy German, Kesseberg, a central figure and quite convincingly gives him a new character.

Perhaps it's south of the border you have in mind. A culturally articulate Brazilian, Erico Verissimo, will give you a compelling new look at Mexico, its history, cities, culture, people. The Director of the Department of Cultural Affairs in the Pan-American Union from 1953 to 1956, Verissimo and his wife went to Mexico from the U.S. where they live permanently. Their visit was thus a cross-cultural affair, and their natural Latin warmth was now and then tempered by Yanqui values. In fact, our relations with Mexico are one of this author's chief concerns. His book will give you much to take with you, and help you get more out of our visit to Mexico. Besides, it is uncommonly good reading.

You are Mediterranean-bound, perhaps? *The Mediterranean Lands* by D. S. Walker—who has an M.A. (Cantab.) under his name—is one of those solid English geographies, but unusually well packed with very good photographs as well as with very much detailed information. If you are a teacher or advanced student and your trip is to be a field course, here is your textbook.

Finally, we have an inviting how-to-travel book, by an expert on *Trailer Travel Here and Abroad*, Wally Byam, who has been building trailers for 30 years and since the war has been conducting mass trailer tours over many parts of the world. He calls trailering "the new way to adventurous living," and although the book reads in part like a soft sell for his make, it is also quite interesting, anecdotal travelog—Mexico, Europe, Africa—and is slanted towards international good relations at the person-to-person, family-to-family level.



**Discovery and Exploration: an Atlas-History of Man's Wanderings.** By Frank Debenham. Introduction by Edward Shackleton. Doubleday & Company, Inc., Garden City, New York. 1960. 272 pp., profusely illustrated in full color, duotone, halftone, and line. \$9.95.

**Wilderness: The Discovery of a Continent of Wonder.** By Rutherford Platt. With illustrations by Frances Ellis. Dodd, Mead & Company, New York. 1961. 310 pp., line drawings. \$6.00.

**Los Angeles: from Mission to Modern City.** By Remi Nadeau. Longmans, Green and Co., New York. 1960. xvi + 302 pp., 30 photographs. \$5.95.

**Skid Road: An Informal Portrait of Seattle.** By Murray Morgan. The Viking Press, New York. (Revised Edition) 1960. 282 pp., endpaper map. \$4.50.

**For Fear We Shall Perish: The Story of the Donner Party Disaster.** By Joseph Pigney. E. P. Dutton & Co., Inc., New York. 1961. 312 pp., map. \$5.00.

**Mexico.** By Erico Verissimo. Translated from the Portuguese by Linton Barrett. The Orion Press, New York. 1960. 341 pp., 16 photographs. \$6.00.

**The Mediterranean Lands.** By D. S. Walker. Methuen & Co., Ltd., London; John Wiley & Sons, Inc., New York. 1960. xxiii + 524 pp., 64 photographs, 56 maps and diagrams. \$6.75.

**Trailer Travel Here and Abroad.** By Wally Byam. David McKay Company, Inc., New York. 1960. xvi + 303 pp., 38 photographs, text figs. and maps in line. \$4.95.



## The Wright Approach to Natural History



One horn?  
Unicorn.

### The Nature Trail

**Nature:** *Earth, Plants, Animals*. Editorial Board: James Fisher, Sir Julian Huxley, with Sir Gerald Barry, Dr. J. Bronowski. The Doubleday Pictorial Library, Volume 2. Doubleday & Company, Inc., Garden City, New York. 1961. 363 pp., over 900 photographs, paintings, and drawings. \$9.95.

The first volume in this series, *Science: Chemistry, Physics, Astronomy* (same editorial board; reviewed in *PD*, Jan.-Feb. 1961), gave promise of an exciting and commendable international publishing venture. This second volume more than confirms the promise. Graphically, it is a beautiful production, the varied elements of illustration contributing strongly to the ordered flow of subject-ideas. The latter is summarized in the Introduction as "a description of the seas and crust of our planet Earth, and the story of how they came to be what they are; and it is a description of the plants and animals of the earth, and the story of how they evolved; and it is a description of the web of life, and the story of how man arose, to become part of it, and finally to dominate it." A large order for one volume, and fulfilled very handsomely. One looks forward eagerly to the next volumes promised: *Geography, World History, Society, The Arts, Technology, Words and Ideas, Health and Welfare*.

**The Lower Animals:** *Living Invertebrates of the World*. By Ralph Buchsbaum and Lorus J. Milne, in collaboration with Mildred Buchsbaum and Margery Milne. A Chanticleer Press Edition. Doubleday & Company, Inc., Garden City, New York. 1960. 303 pp., 292 photographs incl. 144 in full color, 23 drawings. \$12.50.

Another sumptuous volume in Doubleday's *The World of Nature Series*, the latest of which is *Living Fishes of the World* by Dr. Earl S. Herald, Curator of the Steinhart Aquarium of the California Academy of Sciences (to be reviewed in a later issue). This is a happy choice of authors. The Buchsbaums are noted for their *Animals Without Backbones*, outstandingly; and the Milnes are one of America's best known and regarded writing teams in the field of biology and nature. Add to a fully authoritative text a marvelous collection of the world's best available photographs of all that astonishing variety of animal life from Protozoa to crabs, spiders, starfish, and finally the almost-but-not-quite backbone lancelet, and you have a wonderful book. Our cover photo by Woody Williams appears on page 107—but look again: it was taken a few seconds earlier or later. D.G.K.

**Flora of the Santa Cruz Mountains of California.** By John Hunter Thomas. Stanford University Press, Stanford, California. 1961. vi+434 pp., photographs, maps, charts, and line drawings. \$8.50.

The area of the Santa Cruz Mountains extends from San Francisco southward to the Monterey County line and covers almost 1,400 square miles (slightly more than the State of Rhode Island).

The subtitle of this flora, *A Manual of the Vascular Plants*, indicates that it includes ferns, conifers, and flowering plants. There are 1,800 different kinds (species, subspecies, varieties, forms, and hybrids), both native and naturalized, distributed among 168 families.

The main body of the text contains keys to families, genera, and species, and distributional notes of each species. The introduction contains a description of the area, its geology and climate, a dis-

cussion of the several plant communities, and a short history of botanical collecting in the area. There is also a list of references, a glossary of the technical terms, and an index of the place names.

The format of the book is very attractive. Ten photographs illustrate the types of habitats discussed and the 250 line drawings are excellent and will add much to the interest and use of the book by both the "serious beginner and the trained botanist." Both the author and the Stanford University Press are to be congratulated for adding this excellent local flora to those in the nearby regions of central California, Howell's *Marin Flora*, and Bowerman's *The Flowering Plants and Ferns of Mount Diablo*.

Botany Department,  
California Academy of Sciences.

ELIZABETH MCCLINTOCK

### The vacation trail

TOO NUMEROUS TO LIST completely here are the various handy guides and vade mecum of all sorts designed to instruct the vacationer. Here are a few, at hand as we go to press: **Anza-Borrego Desert Guide Book:** *Southern California's Last Frontier*, by Horace Parker (Paisano Press, Box 85, Balboa Island, Calif., 1957, 108 pp., many photos, maps; paper, looseleaf plastic-hinged, \$2.50, or \$2.75 tax- and postpaid from publisher). **Meet the Southwest Deserts**, by Philip Welles, with photos by Marvin H. Frost, Sr. (Dale Stuart King, Publisher, Six Shooter Canyon, Globe, Ariz., 1960, xiv+82 pp., 110 illus. of fauna and flora; paper,

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**"Galathea"-wise and otherwise**

The letter below came addressed to Dr. Robert C. Miller, who is PD's Managing Editor as well as Director, California Academy of Sciences.

EDITOR, *Pacific Discovery*:

Dr. Anton Bruun has shown me the January issue of your beautiful magazine, which contained not only a fine article on the Galathea results, but also a very good account of Dr. Bailey's visit to Campbell Island. Accidentally I happened to be in Philadelphia in the spring of 1959 (during a visit for three months to various natural history museums in the U.S.) and was fortunate enough to attend Dr. Bailey's lecture and beautiful film on Campbell Island.

I write in order to ask whether it will be possible to let me have one or two copies of the January issue for myself and the Galathea file. Also, if possible, one or two copies of the two forthcoming issues which I understand will include the continuation of Dr. Bailey's account.

With my kindest regards, also from Dr. Bruun,

TORREN WOLFF

*Sous-Chef of the Galathea Expedition*

Universitetets Zoologiske Museum,  
 Krystalgade—København K—Danmark,  
 16 February 1961.

EDITOR, *Pacific Discovery*:

Your reminder was so very clever. . . . Thank you. Please renew. PD is magnificent.

GOLDIE P. DAWSON

Acton, Calif., April 1961.

EDITOR, *Pacific Discovery*:

. . . We enjoy every part of your [Academy membership] activities. . . . I am delighted with the recent article on St Hilary's Garden (PD, March-April 1961) as we have all worked to obtain that spot.

Mrs. HARRY ALLEN

Belvedere, Calif., 10 April 1961.

\$1.00; cloth, \$2.25). Also from King: **Frontier Military Pests of Arizona**, by Ray Brandes (1960, xviii + 94 pp., many photos, maps, line figs.; paper, \$1.00; cloth, \$2.25)—for Western military history buffs. **High Sierra: Mountain Wonderland**, by Joseph Wampler and Weldon F. Heald, with an extensive chapter on trout and fishing by Charles McDermond, photos by (mostly) Joseph Wampler (Joseph Wampler, Box 45, Berkeley 1, Calif., 1960, 122 pp., many excellent photos; paper, \$2.00)—a very attractive item by two PD authors who know the Sierra intimately. **Donner Pass, and Those Who Crossed It: The story of the country made notable by the Stevens Party, the Donner Party, the Gold-hunters, and the Railroad Builders**. With old and new illustrations showing the Pass in summer and winter, by George R. Stewart (The California Historical Society, San Francisco, 96 pp., halftones, maps; paper, \$1.95)—one of a series that includes *Fabulous San Simeon*, by Oscar Lewis, and *Los Angeles from the Days of the Pueblo*, by W. W. Robinson—all distributed exclusively by Lane Publishing Co., Menlo Park, Calif. Also from Lane: **Cabins and Vacation Houses**, a Sunset Book by the editorial staffs of Sunset Books and Sunset Magazine (1960, 128 pp., profusely illus. with photos, drawings, plans, specification charts; paper, \$1.95)—a "how-to-deluxe-it" book; **Sunset Western Campsite Directory** (Second Revised Edition), by the editorial staff of Sunset Books (1960, 80 pp., illus.; paper, \$1.50); and a Sunset Discovery Book, **Hawaii: A Guide to All the Islands** (staff, 1960, 96 pp., illus.; paper, \$1.75). **The Camper's Bible**, by Bill Riviere (Doubleday & Company, Inc., Garden City, New York, 1961, 176 pp., many photos, line drawings; paper, \$1.95)—"a complete guide to camping for the sportsman and vacationist." **Common Plants of the Southern California Mountains**, by Harold F. DeLisle (Naturegraph Company, Healdsburg, Calif., 64 pp., photos, line drawings; paper, \$1.00)—truly pocket-size description of 250 wild species you might meet above 4,000 feet, south of Santa Barbara. A pamphlet series called Pages of History comes from Sausalito, Calif. (Box 6), edited by Sarah Ann Davis, with titles including **The Mojave of the Colorado: The Story of the Mojave Indians of the Colorado River and their Meetings with the Explorers of the Southwest** (1960, 24 pp., illus., 50c); **Jade in California** (1960), 24 pp., 50c; **Diving and Digging for Gold** (1960, 24 pp., 75c).

## academically speaking

"THERE IS NO PERSON nor personage more welcome in this institution than a small boy with something clutched in his fist that he wants to know the name of." This observation, made some years ago by Dr. Robert C. Miller, Director of the Academy, will not be found in Bartlett's *Quotations*, but the truth of it has motivated one of the least publicized but highly important activities at the California Academy of Sciences: the Student Section.

Few members and fewer outsiders realize that in two basement rooms, students from Bay Area junior and senior high schools congregate daily (particularly on Saturdays) to pursue scientific bents in most all of the various fields. The projects on which they work are selected personally, but are furthered under the supervision of regular Academy personnel as well as student curators of the Section. The students have a modestly-equipped laboratory in which to work, and an extensive scientific library readily available to them. Collections are maintained within the Section for study and reference, and most of the collecting has been done by the students themselves.

A good example of the enthusiasm typical of these tyro scientists is a recent observing and collecting trip which a fortunate few (they are chosen by vote of the Student Council) made to the McAllister Wash area of the Sonora Desert in Yuma County, Arizona.

At 2:30 A.M. on the morning of Saturday, March 25, the Academy's Greenbrier station wagon and a private car with rented trailer departed from the Academy quadrangle carrying 14 persons, personal luggage, sleeping bags, \$49.44 worth of canned goods, collecting equipment necessary for any one of several scientific activities, and a mountain of miscellanea too much to mention. In the party were Mrs. John Weaver, Supervisor of the Section, Jay A. Hamann, the Section's part-time Field Biologist, and Michael Blackford and Catherine Toschi of the University of California at Berkeley; Robert L. Empie, Ganesha High School, Pomona; John Hendrickson, Jr., University of San Francisco; Darwen Hennings, Nick Karres and Kenneth Lehre, Westmoor High School, Daly City; Ted Kipping, Lick-Wilmerding School, San Francisco; Margaret Maisler, City College of San Francisco; Constantine Slobodchikoff, Washington High School, San Francisco; Robert Young, Lowell High School, and Chris Wimmer, San Francisco State. Their ages ranged from 16 to 23.

After a long and arduous journey with only brief stopovers at Cleveland National Forest and Anza Borrego State Park, they made their base camp in McAllister Wash which is approximately 40 miles north of Yuma on the Colorado River. Four full days were spent here, observing, collecting, exploring, studying. Because of his interest in the enthusiastic young scientists, Nathan Berry, U.S. Department of Agriculture, Agricultural Research Service, joined the entomology group on a field trip to Palm Canyon.

Collecting was "fair to middling" according to Mr. Hamann. But some of the specimens were noteworthy, including some kangaroo rats and two difficult-to-find velvet ants. They collected hundreds of insects, a long-nosed snake, and various kinds of bees. They gathered desert plants. Catherine Toschi did a bee census. And they took turns cooking and cleaning up.

They were up at sunrise and scarcely stopped for food during the course of the hot desert days; and long after dark the sand dunes around were dotted with the flicker of lantern light as they inspected their traps or, in some



Young scientists in the desert—back: Chris Wemmer, Darwen Hennings, at work on mammals and birds; foreground: Ken Lehre pinning up the day's catch of insects. (From Kodachrome by Dolla Cox Weaver)

cases, doggedly pursued a will-o'-the-wisp specimen which always seemed to elude them over the next dune. Five eager entomologists huddled together in the cold desert night around a white sheet, illuminated by a Coleman lantern, waiting for a prize of an insect to come within collecting distance. Sleep, such as there was of it, seemed only an unnecessary waste of time.

But finally the allotted days for the expedition came to an end, and reluctantly the collecting gear had to be put away. The group arrived back at the Academy at 11:00 P.M., Saturday, April 1. However, they each knew that in a large degree they had followed the credo implicit in the Section's motto: *Venimus, Vidimus, Didicimus*—"We came, we saw, we learned."

Mrs. Weaver, Student Section Supervisor and a comparative newcomer to the Academy staff, mused about the Section, the students in it, and the Section's relationship with the Academy: "It is completely unique," she said. "I don't think there is anything comparable in the United States. The Academy is so generous with the space they give us, and the support, and the interest. And we have the Mailliard Library, so great and so handy. But most important of all, is the time and the effort and the encouragement that the members of the curatorial staff give to these kids. No one ever seems too busy to give the students whatever help or direction they may be needing."

The individual personalities of the young people in the Section belie the cliché caricature of the bespectacled science major, the "grind," the humorless, single-tracked "square." "They are interested in everything," Mrs. Weaver continued. "We have musicians, artists, writers, readers. They like to talk politics and they compare notes on the local theatre and the latest symphony concerts—all the while finishing up a study skin or identifying plants or keying out an insect."

"The word is getting around about the Section and what the Academy so generously offers," she concluded. "It's growing by leaps and bounds. But I know it's all right, for Dr. Miller couldn't be happier. He loves it." H.R.



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